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THE JOURNAL OF POLITICAL ECONOMY

EDITED BY JACOB VINER AND F. H. KNIGHT, WITH THE CO-OPERATION OF THE OTHER MEMBERS OF THE DEPARTMENT OF ECONOMICS OF THE UNIVERSITY OF CHICAGO

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THE JOURNAL OF
POLITICAL ECONOMY

Volume LII SEPTEMBER 1944 Number 3

GROWTH OF THE AMERICAN GLASS INDUSTRY TO 1880[1]

WARREN C. SCOVILLE

SINCE the beginning of the twentieth century the history of American glassware and its manufacture has attracted much attention from antiquarians and collectors, and a large part of the available information as to the industry's rise and early progress is due to their unflagging interest and energy.[2] Economic historians, on the other hand, have been little concerned with glassmaking, presumably because it has not equaled in size such major American industries as textiles, iron and steel, shipbuilding, machine construction, and the like. Glass, nevertheless, offers interesting possibilities for a study of the factors conducive to industrial growth and technological change. Although it was among the first commodities made in the Colonies, the progress achieved in its manufacture during the seventeenth, eighteenth, and nineteenth centuries was less pronounced than that of most industries. With the exception of pressing, it developed few peculiarly American features until after 1880, and

[1] It is proposed at a later date to analyze developments in glassmaking from 1880 to 1920, when the old and traditional techniques were revolutionized by new processes. A liberal grant for 1942–44 from the Committee on Research in Economic History has made possible the collection of the material, and its chairman, Dr. Arthur H. Cole, has offered constant encouragement and many helpful suggestions. The administration at the Massachusetts Institute of Technology—especially Professor W. Rupert Maclaurin, head of the Industrial Relations Section, and Professor Howard R. Bartlett, head of the English and History Department—also has facilitated the work in every way possible.

The present essay is based primarily upon some thirty-odd volumes of observations, notes, correspondence with glass-manufacturers in the United States and other countries, and clippings ("Scraps") from trade-journals and newspapers which were compiled by Thomas Gaffield and are now deposited in the library of the Massachusetts Institute of Technology. His "Glass Journal" (4 vols.), "Notes on Glass" (5 vols.), "Correspondence" (4 vols.), and a few other items are in manuscript form. Dr. Pearce Davis, whose unpublished doctoral dissertation entitled "The American Glass Industry and the Tariff" (Harvard University, April 1, 1938) represents a valuable contribution to our knowledge of the industry's development along particular lines, has graciously permitted me to utilize as much of his material as I might deem desirable. His work, which will be published eventually as one of the "Harvard Economic Studies," differs from mine in both focus and approach.

[2] In addition to individual works to which specific reference will be made from time to time, they have contributed many interesting sketches of individual glassmen or furnaces in the magazine *Antiques*, published continuously since 1922. Such information as they have provided, it seems to me, is deserving of more attention than most economic historians have been inclined to accord it.

its basic techniques differed little from those which had been practiced in other parts of the world four hundred years earlier.[3] In 1890–1920 a series of mechanical improvements, many of them stemming from Toledo, Ohio, revolutionized glassmaking. American firms thereupon ceased being laggard imitators of European producers and became world leaders. The industry's complexion accordingly changed. Whereas individual companies had been comparatively small in size during the nineteenth century, many thereafter developed into million-dollar corporations with several branch factories scattered over the country. Large-scale production became typical rather than exceptional, and the manufacture of glass products could no longer be considered "backward" as compared with other industries.

The present essay is concerned with the evolution of the glass industry and with an analysis of the factors conditioning its progress before 1880. After a brief account of the emergence of glassmaking during the seventeenth and eighteenth centuries, the industry's growth during the nineteenth century will be described in terms of the increase in the number of glasshouses and in the size of the "typical" firm as suggested by data on capitalization, numbers employed, or output. Since technology played a vital role in controlling this growth, changes in the methods followed by American glassmen will be traced in some detail. Such other factors as (1) the availability of skilled workmen, (2) the sources and quality of domestic supplies of basic materials, (3) the evolution of consumer demand, and (4) government policy, crises, and wars will then be discussed and an attempt made to evaluate their effects. Finally, the influence which the "typical" entrepreneur exercised upon the organization of the industry, the extent of competition, and the adoption of new techniques will be considered.

[3] As a matter of fact, even the development of the glassmaking art in western Europe following A.D. 1000 had been limited to a great extent to "rediscovering" the methods formerly developed by the Phoenicians, Syrians, Egyptians, and Romans. There is some evidence that before the end of the Roman era glass had been cast and pressed as well as blown, that relatively transparent "crystal" and beautifully colored—especially ruby—glass had been developed, and that hooded crucibles had been used (see, e.g., Deming Jarves, *Reminiscences of Glass-making* [2d ed.; New York, 1865], pp. 19, 39–40; C. J. Phillips, *Glass: The Miracle Maker: Its History, Technology and Applications* [New York, 1941], pp. 6–8; Mary Harrod Northend, *American Glass* [new ed.; New York, 1936], p. 49; and Joseph D. Weeks, *Report on the Manufacture of Glass in the United States* [New York, 1883], pp. 56, 58; Weeks's *Report* is available in Vol. II of the *Tenth Census*).

I. GLASSMAKING DURING THE SEVENTEENTH AND EIGHTEENTH CENTURIES

Apparently glass had never been made in what was to become the continental United States until the first English settlers arrived at Jamestown. In 1608 eight Dutchmen or other foreigners were sent over by the London Company to teach its colonists to make glass, and for a very few years a glasshouse was actually operated near the settlement. In 1621 a second group—this time predominantly Italian—was dispatched to Jamestown to make glass beads for the Indian trade, and its leader was cautioned to limit the quantity to the needs of trade lest their value be "vilified" through too great abundance. Furthermore, the natives were not to be allowed under any circumstances to witness the process of manufacture. Undoubtedly, glass was made at the new furnace. Some of the glass beads have been unearthed and are now preserved in the Toledo Museum of Art. But production was con-

tinued for only a few years.[4] Less definite evidence suggests that other furnaces may also have been worked a short time at Salem, Massachusetts, in the 1640's;[5] near Philadelphia in the 1680's; and at two places in New Amsterdam by the Dutch during the third quarter of the seventeenth century. No domestic glass apparently was made in 1700 or in the following four decades.

A successful brass-button manufacturer at Philadelphia named Wistar built a glasshouse in Salem County, New Jersey, in 1739, which he and his son operated until the outbreak of the Revolution. No domestic competitor of any importance appeared on the scene until 1763, when the colorful "Baron" Henry William Stiegel—both the hope and the despair of present-day collectors—diverted his attention from ironworking to glass-blowing.[6] He was bankrupt in 1774; and only a small furnace, lighted in that year at Glassboro, New Jersey, by a small group of runaway workers from Wistar's plant, and another built near Philadelphia in 1771–72, survived the Revolutionary era. During the last two decades of the century, however, the industry expanded sufficiently to establish itself as an American manufacture. Furnaces were built at Temple, New Hampshire, in 1780; at Manchester, Connecticut, in 1783; at Frederick, Maryland, in 1784; near Albany, New York, in 1785; at Boston sometime between 1787 and 1792; and at Philadelphia between 1780 and 1786. In addition, during the 1790's glass was actually blown in two and possibly three houses in western Pennsylvania.[7] Most of these establishments were still active in 1800.[8]

Very little is definitely known as to the scale upon which these early shops operated. Most of them, doubtless, had only one small furnace and employed a dozen or more men. On the other hand, two or three built during the eighteenth century were much larger, with two melting furnaces, many auxiliary ovens, and a working force of a hundred or more individuals.[9] But they were less successful financially than many of the smaller plants. Since the size of the market for any one furnace was narrowly limited by the country's sparse population and in-

[4] See Davis, *op. cit.*, pp. 1–2; Frederick T. Irwin, *The Story of Sandwich Glass and Glass Workers* (Manchester, N.H., 1926), pp. 9–11; George S. and Helen McKearin, *American Glass* (New York, 1941), pp. 75–76; Northend, *op. cit.*, pp. 13–16; Thomas Gaffield Collection—hereafter referred to as "Gaffield"—"Notes on Glass," III, 211; V, 92–95.

[5] James Gillinder, "American Glass Interests," in *One Hundred Years of American Commerce*, Chauncey M. Depew, ed. (New York, 1895), I, 276; Sterling Lanier, "A Cloth of Glass," *Technology Review*, XLIV (Concord, N.H., 1942), 268; McKearin, *op. cit.*, p. 77; Davis, *op. cit.*, p. 2. Some uncertainty exists as to the exact dates when glass was made here. In 1639 several acres of land were allotted to three glassmakers, and as late as 1669 there is some mention of the "glass house people" (Gaffield, "Notes on Glass," III, 212–13).

[6] See George L. Heiges, *Henry William Stiegel: The Life Story of a Famous American Glass-Maker* (Manheim, Pa., 1937); and Frederick William Hunter, *Stiegel Glass* (Boston, 1914).

[7] Albert Gallatin, later secretary of the Treasury, started a factory in 1797 at New Geneva, which continued after he sold his interest in it; and General James O'Hara and Major Isaac Craig built their plant at Pittsburgh in 1796. Some mention is made of a small window-glass plant called "Scott's" at Pittsburgh in 1795 (George H. Thurston, *Pittsburgh as It Is; or, Facts and Figures Exhibiting the Past and Present of Pittsburgh, Its Advantages, Resources, Manufactures, and Commerce* [Pittsburgh, 1857], pp. 140 ff.; Gillinder, *op. cit.*, p. 275; Weeks, *op. cit.*, p. 82).

[8] Two or three glasshouses, in addition to those mentioned, may have been worked in other places for a short time (see McKearin, *op. cit.*, pp. 584 ff.; N. Hudson Moore, *Old Glass, European and American* [new ed.; New York, 1935], p. 369).

[9] E.g., Amelung's New Bremen works (McKearin, *op. cit.*, pp. 100 ff.) and Stiegel's (*ibid.*, pp. 83–84; Heiges, *op. cit.*, p. 33; Hunter, *op. cit.*, pp. 62–63 and Appendix; Rhea Mansfield Knittle, *Early American Glass* [New York, 1927], p. 122).

adequate transportation facilities, it is not surprising that small-scale production characterized the industry. "Most new works," a Pennsylvanian wrote in 1789, "have been begun too large in this country. . . . . If we built a glass house, it was at the expense of thousands [of dollars], and calculated to cover all that part of the country with glass which was not covered by the houses."[10]

The bankruptcy of "Baron" Stiegel's grandiose undertaking at Manheim, Pennsylvania (1764–74),[11] probably evoked this reference to glass. After having first limited himself to window and bottle glass, he soon ventured into the production of enameled and colored tableware, skilfully patterned after popular Bohemian importations. Some of this contained lead (i.e., was flint glass), but most of it had a soda-lime base. Amelung's New Bremen factory in Maryland was the only other enterprise which made very large quantities of fine glassware for domestic use during the seventeenth and eighteenth centuries. Nearly all the others made bottles or window glass, both of which not only required less expense and skill but also were in much greater demand. Window glass apparently was not blown in America until Wistar's South Jersey furnace was fired shortly after 1739 or before Stiegel first experimented with glass at his Elizabeth furnace ironworks in 1763.[12] But, before the century ended, its production was well under way at several points along the seaboard and also west of the Alleghenies.[13]

Although glassmaking had not flourished in America before 1800, bottles, window glass, and both flint and ordinary glassware had been blown with varying degrees of success. Many Europeans, skilled in the art, had been brought over by various entrepreneurs,[14] and the sources of some of the basic materials had been located and the quality of their output tested. Furthermore, several houses had been built both east and west of the mountains and operated with enough success to warrant continued production over a period of years. These accomplishments helped to prepare the way for the industry's expansion during the next hundred years.

II. INDUSTRIAL GROWTH DURING THE NINETEENTH CENTURY

A particularly interesting feature of this growth was the rapid increase in the number of glasshouses. There probably were around 9 or 10 in 1800, more than

[10] Quoted in V. S. Clark, *History of Manufactures in the United States, 1607–1928* (New York, 1929), I, 105–6.

[11] Others attempted to continue operations there for a very short time (Heiges, *op. cit.*, p. 42; Hunter, *op. cit.*, pp. 103 ff.).

[12] No one seems to know exactly what sort of glass was produced by Wistar during the early years. Some writers think that his men made flint as well as window glass. But Stiegel probably was the first to make the former, and he might even have been able to claim priority in the production of glass for windowpanes (see Davis, *op. cit.*, p. 4; McKearin, *op. cit.*, p. 37; Northend, *op. cit.*, pp. 24 ff.; Arthur E. Fowle, *Flat Glass* [Toledo, 1924], p. 25).

[13] Evidently all the furnaces in the West made window glass as well as bottles (Gillinder, *op. cit.*, p. 275; Thurston, *op. cit.*, pp. 140–41; Weeks, *op. cit.*, p. 82; Macbeth–Evans Glass Company, *Fifty Years of Glass Making, 1869–1919* [Pittsburgh, 1920] p. 20).

[14] Stiegel himself went to Europe in search of Venetian, German, and English glassmen (Knittle, *op. cit.*, pp. 121–22); and John Frederick Amelung brought over 68 workmen from Germany when he first arrived in Baltimore in August, 1784, and an assistant accompanied by 14 more came over later (J. F. Amelung, *Remarks on Manufactures* [1787], now in the library of the Boston Athenaeum but reprinted in part by McKearin, *op. cit.*, pp. 100–101). Earlier, on December 7, 1738, Caspar Wistar had made a contract with one Captain John Marshall to bring over four expert glass-blowers from Rotterdam (*ibid.*, p. 79; Northend, *op. cit.*, p. 23).

twice this number a decade later,[15] and at least 33 in 1820.[16] According to the inadequate returns of the *Seventh Census* and the more reliable figures of the *Tenth*, 94 establishments were making glass at the middle of the century, and 169 were actually at work in 1880. Forty-two others were being built or were standing idle.

A. INCREASE IN THE NUMBER OF SHOPS IN THE WINDOW-GLASS, BOTTLE, TABLEWARE, AND PLATE-GLASS BRANCHES

These figures, however, do not mean that all branches of the industry expanded at the same rate. Nearly all the 9 or 10 houses operating in 1800 made window glass as their specialty or side line, and 18 in 1820 turned out this product exclusively. Four others produced some bottles as well.[17] The number of window-glass factories continued to increase; but the importance of their output relative to total production declined from 70 per cent in 1820 to about 40 per cent in 1831 and to approximately 24 per cent in 1880, when 49 factories were in operation.[18]

Unfortunately, the available data will not permit a similar analysis of the bottle or container branch. In 1800 some of the shops made bottles and flasks. Two decades later 4 were exclusively engaged in this line, and 6 others turned out bottles along with either tableware or window glass. According to Weeks's report, 42 green-glass factories were producing a little less than 27 per cent of the industry's output in 1880.[19] Most of the green glass was made into bottles, and the small portion which was blown as tableware was probably more than offset by the number of containers made of flint and lime glass. Hence, bottle factories probably increased in number at a somewhat faster rate after 1800–1820 than did those making window glass.

Apparently not a single shop in 1800 specialized in tableware, although the workers in most of them made a few pieces on the side. By 1820, however, this branch of the industry was securely established;[20] and, of the 68-odd factories built between 1820 and 1840, at least 25 were designed primarily to fashion glassware for table or domestic use.[21] The 73 houses reported in the *Tenth Census* as actually making flint and lime glassware in 1880 accounted for slightly more than 45 per cent of the total output.[22] Until the Civil War this growth was a reflection of the increasing popularity of flint glass. Certain Pittsburgh entrepreneurs

[15] Davis, *op. cit.*, pp. 7–8, 12–13; U.S. Department of the Treasury, *A Statement of the Arts and Manufactures of the United States of America for the Year 1810*, prepared by Tench Coxe (Philadelphia, 1814), Table 28.

[16] "Digest of Manufactures," *Fourth Census, American State Papers: Finance*, Vol. IV (Washington, 1858). This is probably an understatement, since the census returns were quite incomplete. For example, the census includes only 5 works for New Jersey, whereas the careful checking done by the McKearins led them to conclude that there were about 11 operating in South Jersey alone (*op. cit.*, p. 165). In their opinion, "more than 40" probably were at work throughout the United States (*ibid.*, p. 135).

[17] *Fourth Census*. Weeks concludes that there were "at least" 15 window-glass plants in the United States by 1810 (*op. cit.*, p. 83, n. *c*).

[18] Davis, *op. cit.*, pp. 20, 66; and Weeks, *op. cit.*, Tables II and VI.

[19] Cf. Table IV with Table VI in Weeks, *op. cit.*, pp. 12, 15.

[20] The census for this year reported 5 which made either fine or common glassware exclusively and 2 others which also made some bottles.

[21] McKearin, *op. cit.*, p. 135.

[22] Cf. Table III with Table VI in Weeks, *op. cit.*, pp. 12, 15. It is true that not all their output was tableware, since some druggists' and chemists' ware was made of flint glass; but, on the other hand, tumblers, dishes, pitchers, and the like were also made by a few of the 42 factories listed under "green glass." Those making lamp chimneys are included in the "tableware" branch.

in 1807–8 made the first attempt of the nineteenth century[23] to produce white glass with a lead base, and several others soon followed their example.[24] At the time of the New York Tariff Convention in 1831, for example, there were at least 17 firms operating 21 flint-glass furnaces, and by 1852 the number of shops had increased to around 25. But an improved form of lime glass, developed in 1864, was used so successfully for tableware that the relative importance of flint declined.

The production of rough or polished plate—the fourth major branch of the industry—did not arise until the latter half of the century. In 1852 a window-glass plant at Cheshire, Massachusetts, made some rough plate for about six months and then sold its equipment to a group of men who continued production at Brooklyn, New York, for two or three years.[25] Meanwhile, two of the workmen at Cheshire went to another window-glass plant at Lenox, Massachusetts, in order to introduce there the technique of casting plate.[26] Although the company failed several times and was reorganized under various firm names,[27] the Lenox works were the first in the United States to make rough plate successfully. During all but a few of the years from 1853 until after 1880 they cast plate glass, and once or twice they attempted to polish it. The first factory which both cast and polished commercial quantities was built at New Albany, Indiana, between 1867 and 1870. During the following decade three new plants were erected on extensive scales,[28] and the Berkshire Glass Works at Lanesboro, Massachusetts, also began to make unfinished plate for church windows. Hence in 1880 there were three factories which made and finished plate glass, two which only cast it, and a sixth—the Berkshire Company—which was standing idle.

B. INCREASE IN THE SIZE OF SHOPS IN THE FOUR BRANCHES

This increase in the number of firms does not reveal adequately either the extent of expansion or the nature of the industry. Just as significant were changes in the scale of operations of individual factories.[29] A majority of those making

[23] Apparently, no American furnace had produced flint since "Baron" Stiegel's bankruptcy in 1774 (see above, p. 196).

[24] In 1820, 4 or 5 houses were making some flint (*Fourth Census;* Davis, *op. cit.*, pp. 24–25).

[25] Gaffield, "Scraps," I, 162; Weeks, *op. cit.*, pp. 98–99; Gillinder, *op. cit.*, p. 279. There is some unsatisfactory evidence that rough plate was also made in the early 1850's at Green Point, New York (*ibid.*, p. 279; Davis, *op. cit.*, p. 102), and at Philadelphia by the Anthracite Glass Works (Gaffield, "Prices Current of Window Glass," p. 103).

[26] Gaffield, "Scraps," I, 28–30. Later, in 1855 or 1856, the itinerant equipment at Brooklyn was brought to the Lenox plant.

[27] It was first an adjunct of the Lenox Iron Works; then was reorganized by other entrepreneurs as the National Plate Glass Company in 1855; reverted to the original owners in 1857; was separately incorporated as the Lenox Rough Plate Glass Company in May, 1864; had a disastrous experience with cryolite glass in 1870–71 as the Lenox Glass Company; then passed into the hands of other individuals who retained its name; and was finally reorganized as the Lenox Glass Works in 1879 (Gaffield, "Glass Journal," I, 272; II, 20–21, 26–27, 87, 221; III, 281; "Glass Making," Vol. IV; "Notes on Glass," IV, 165–66; "Scraps," I, 28–30, 91–92, 124; Davis, *op. cit.*, pp. 102–3, 244–45; Weeks, *op. cit.*, pp. 98–99).

[28] At Louisville, Ky., in 1870; at Crystal City, Mo., in 1872; and at Jeffersonville, Ind., in 1876 (Arthur Pound, *Salt of the Earth: The Story of Captain J. B. Ford and Michigan Alkali Company* [Boston, 1940], p. 27; Gaffield, "Correspondence on Glass and Glass Making," I, 21; "Glass Journal," II, 224, 226; III, 131; "Scraps," I, 4, 123, 125, 151, 158, 162; II, 125, 134, 162; Gillinder, *op. cit.*, p. 280; Weeks, *op. cit.*, p. 99).

[29] The sources which lend support to the following generalizations are far too numerous to give here. Hundreds of statements as to the size of individual plants have been culled from the publications of various collectors and antique dealers and from the

window glass in 1800–1830 employed between 25 and 40 workmen, produced an annual output valued at from $12,000 to $30,000, and had fixed investments which probably ranged from $10,000 to $25,000.[30] An insufficiency of data prevents the striking of such modal averages for bottle and tableware shops, but it appears that the former were smaller and the latter larger than window-glass plants.[31]

By 1840–50 the "typical" plant had definitely increased in size. The census returns suggest that the average laboring force numbered from 30 to 60 individuals in 1840 and from 35 to 70 in 1850. The vast majority made glass valued at $20,000–$50,000 each year,[32] and most of the owners reported a capitalization ranging from $20,000 to $40,000.[33] Since the published returns for this period do not group the firms in accordance with the kind of glass made but only by counties or states, it is difficult to judge whether establishments in any one branch of the industry operated on a larger scale than those in another. Supplementary data, however, lend the impression that most bottle and window-glass factories were of about equal size. Those making tableware apparently were the largest.

TABLE 1*

AVERAGE SIZE OF GLASSHOUSES IN 1880

Kind of Glass Produced	No. of Firms Included in Average	Capital Employed per Plant	Number of Workers per Plant	Value of Annual Output per Plant
Plate glass†	4	$635,500	225	$205,641
Window glass	49	95,983	79	103,006
Glassware (lime and flint)	73	94,620	173	131,076
Green glass	42	109,694	159	135,010

* Based upon data given in Weeks, *Report on the Manufacture of Glass in the United States* (New York, 1883), Tables I–IV and table on p. 3.

† A fifth factory, the Lenox Glass Works in Massachusetts, was not included because its much smaller size would vitiate the average. It had only $45,000 capital, 58 employees, and $45,843 output.

Weeks's excellent report and the increased efficiency of the Census enable one to ascertain the state of the industry in 1880 with much greater accuracy than in any previous year. The arithmetic averages given in Table 1 suggest the scale upon which plants in the four branches operated at that time. The plate-glass factories were the largest, as measured by the number of workmen and the value of their output. Furthermore, they employed more than twice the amount of capital per worker than other factories because the equipment necessary for casting, grinding, and pol-

notes, journals, and newspaper clippings in Thomas Gaffield's collection. Whenever possible, the figures in the census reports were first broken down into counties and branches of the industry; and then separate averages were made. This permitted some sort of approach to a "modal average" and minimized the distortion which would have been caused in a comprehensive arithmetic average by unusually large or small shops.

[30] Several were capitalized at $100,000, but it is extremely doubtful whether anything like this amount was ever paid in by the owners. In order to make the figures on output and capitalization comparable with those for 1880, they have to be adjusted in accordance with changes in the price of glassware and of general commodities, respectively. The value of glass made each year in 1800–1830, therefore, should be multiplied by something like 0.3; capitalization, by 0.8 (see my Chart II, in a later issue).

[31] All the bottle-shops listed in the 1820 census, for example, were said to provide work for only 10–20 individuals, and other information suggests that those specializing in tableware from 1817 to 1825 hired from 22 to 96 persons and produced an output valued at $20,000–$65,000.

[32] The modal average for 1840 was probably $25,000–$40,000; for 1850, $35,000–$50,000.

[33] The value of output for 1840–50 should be multiplied by 0.75 and capitalization by 1.2 in order to make them comparable with the respective figures for 1880.

ishing was very expensive.[34] Most green-glass plants (whose output was predominantly bottles and other containers) and those making flint and lime glassware primarily for household use[35] hired at least twice as many workmen as the majority of window-glass factories. This was due not only to their larger output but also to the fact that the processes involved in shaping and finishing bottles and tableware required relatively more labor and less capital per worker than window glass.

For the industry as a whole the size of the "typical" plant had grown substantially since the first half of the century. In all but the window-glass branch the average working force had expanded from threefold to fivefold, with the greatest absolute increase apparently coming after the Civil War. It should be recognized, however, that such arithmetic or modal averages as have been used to limn this growth have definite limitations. It would be a mistake, for example, to conclude that the smaller shop so common before 1830 no longer existed in 1880. Several were still operating on such a small scale that only from 15 to 40 workers were needed. It would be equally misleading to assume from the foregoing analysis that no glasshouses before 1850 were comparable in size to the larger ones at work in 1880. Two in the tableware division and one making containers were outstanding exceptions. Soon after its incorporation in 1817, the New England Glass Company was capitalized at $40,000 and employed about 40 persons to make $40,000 of glassware a year. The second—the Boston and Sandwich Glass Company, founded in 1825–26—hired about 60 individuals and boasted of an output valued at $75,000. By 1852 each of these companies had a capitalization of $400,000, from 400 to 500 workpeople, and an annual production worth around $500,000.[36] The owner of the third—a bottle and vial factory called the Dyottville Glass Works in the Kensington district of Philadelphia—claimed in 1832 that he employed almost 400 individuals and made between 1,100 and 1,200 tons of glass each year.[37] Production on a scale approaching that of these three companies had been achieved by several others in each branch of the industry before 1880. The vast majority, however, were still small as compared with the typical plant following the mechanical revolution of the twentieth century.

III. COMPOSITION OF GLASS AND METHODS ADOPTED IN WORKING IT

The main reason why most shops remained relatively small in size until after 1880 was that the techniques they employed still necessitated handicraft production and highly skilled labor. The

[34] By 1880–82 the one at Crystal City, Mo., had a capitalization of over $1,000,000, a personnel numbering between 350 and 500, and a yearly product of something like $322,000 (Weeks, *op. cit.*, Table I; Gaffield, "Glass Journal," III, 267, 280; "Scraps," II, 154, 193). Another at New Albany, Ind., boasted in 1882 that it employed 1,000 workpeople to produce its million-dollar output and that it had over $1,000,000 of capital invested in plant, equipment, and stock on hand ("Scraps," II, 132; III, 123).

[35] Some, however, specialized in druggists' and chemists' ware.

[36] Deming Jarvis [*sic*], "The Manufacture of Glass," *Hunt's Merchants' Magazine and Commercial Review*, XXVIII (January–June, 1853), 121; Jarves, *Reminiscences*, pp. 61–63; Frank W. Chipman, *The Romance of Old Sandwich Glass* (Sandwich, Mass., 1932), p. 38; Lura Woodside Watkins, *Cambridge Glass, 1818 to 1888* (Boston, 1930), pp. 18, 28.

[37] T. W. Dyott, *An Exposition of the System of Moral and Mental Labor, Established at the Glass Factory of Dyottville, in the County of Philadelphia* (Philadelphia, 1833), pp. 13, 54; Gillinder, *op. cit.*, p. 274; "Report on Glass Manufacturing in 1832" in Gaffield, "Glass Making," p. 124.

first glassmen in the United States naturally patterned their methods after those current in European countries, and they continued to do so throughout most of the nineteenth century. Few innovations were of American origin. Technological development lagged appreciably behind that in Belgium, England, France, and Germany. In order to explain the complexion of the industry from 1800 to 1880, therefore, it is essential to understand the evolution of those techniques which were basic in melting and fashioning glass.

Lime, silica, soda or potash, and cullet were the chief basic materials; but small amounts of other chemicals, such as arsenic, manganese, or cobalt, were often used to lessen the greenish tint resulting from iron particles in the sand or to add color to the finished product. After the materials were thoroughly mixed by hand,[38] the resulting batch was placed in several pots ranged against the inside wall of the main furnace and melted. Usually, as the ingredients fused and the batch decreased in volume, more was added. The metal was then subjected to a sustained heat and refined,[39] after which the temperature was lowered in order to bring the glass to a consistency approaching that of molasses on a cold December morning. By this time the metal was ready to be worked.

[38] Mixing was generally done by hand as late as 1880. Weeks remarked: "Many attempts have been made to introduce mechanical mixers, but, though some are used, they have been discarded in many works, and the older method is employed" (*op. cit.*, p. 43).

[39] In the early days when the basic materials varied a great deal in quality, relatively large amounts of sandiver or glass gall formed on the surface as scum, and this had to be carefully ladled out of the pots. Furthermore, in order to agitate the metal and remove all "seeds" or bubbles, an Irish potato was not infrequently dropped into each pot. Its almost instant consumption produced steam which, in escaping, accomplished the desired result.

A. PRODUCTION OF WINDOW GLASS

There were two distinct processes employed in 1800 for making glass suitable for windowpanes. According to one, a worker, called the "gatherer," collected on the end of his blowpipe a suitable quantity of metal from one of the pots, rolled ("marvered") it on a marble or wooden block[40] until it formed a cohesive mass of the desired shape, and then turned it over to the blower. This individual blew the glass into a large globe, to which an assistant attached a solid iron rod (the "pontil" or "punty") at the opposite center. Next, the blowpipe was broken away, and a workman twirled the pontil until the bowl opened out into a flat plate.[41] When the pontil was finally cracked off, a rough, thick bull's eye was left in the center.[42] Glass made in this manner was called "crown."[43]

The other process was used in forming cylinder or sheet glass. The gathering and marvering operations were the same as with crown, but instead of a globe the workman blew a large cylinder.[44] One end of this was popped open by reheating

[40] Shortly before or after 1880 iron blocks, dusted with sawdust or faced with wood, were used instead of wooden marvers (Davis, *op. cit.*, p. 164).

[41] Meanwhile, the glass had had to be reheated several times at the furnace in order to preserve its viscous state.

[42] Exactly the same process had been monopolized in France for centuries by the members of four noble Norman families (see my "Labor and Labor Conditions in the French Glass Industry, 1643–1789," *Journal of Modern History*, XV [1943], 293).

[43] Today, "crown glass" designates an optical glass of different refractive powers from flint.

[44] "The labor is severe, and commands wages equal, if not superior, to any manual labor performed. Some of the cylinders blown are very large, being from four to five feet in length, and from twelve to fourteen inches in diameter" (*Scientific American*, February 20, 1869, p. 144). By 1880 they were usually 60 inches long and 40 inches in circumference (Weeks, *op. cit.*, p. 51).

it at the furnace, and the second, to which the pipe was attached, was cracked off by encircling it with a thread of hot glass which was then suddenly cooled with a few drops of water. Next, the cylinder was slit with a red-hot or diamond-pointed knife, reheated in the flattening oven, and gradually unfolded and smoothed by a worker with the aid of a small block of charred wood attached to the end of an iron rod. This last operation caused cylinder glass to have a much less brilliant finish than crown because the latter did not come in contact with any tool until it had hardened. Cylinder, nonetheless, had other features which more than offset this disadvantage. There was less waste in cutting windowpanes because there was no bull's eye, and for the same reason larger pieces could be obtained.[45] Furthermore, since its thickness was more uniform than that of crown, light was less distorted.[46] These features, more than a difference in cost of production, were responsible for the increasing popularity of cylinder glass during the nineteenth century.[47]

Although "Baron" Stiegel may have made both kinds of window glass before the Revolution, the first American factory primarily engaged in the production of crown was the very successful Boston house established on Essex Street in 1787–92. But even this one and the six others which had been started in the meantime either had failed by 1830 or had switched entirely to sheet. In 1831–32 only the New England Crown Glass Company in East Cambridge was active, although other works were being constructed at that time near Redford, New York. Two other houses later attempted to make a little crown glass, but shortly after 1850 none was being produced anywhere in the country.[48] The blowing and flattening of cylinders, therefore, remained the only process employed in window-glass plants during the last half of the century.

B. PRODUCTION OF BOTTLES

Bottles required less skill on the part of workers than did either crown or sheet. After a small gob of glass had been taken from the furnace pots on the end of the pipe and then marvered, the workman proceeded to shape the bottle usually, but not always, with the aid of some sort of mold. Most of the molds used around 1800 were made either of clay or of wood and formed only the base and body of the container; the neck had to be drawn out by the blower. Shortly thereafter, the two-piece, hinged mold which formed all but the bottle's mouth became common;[49] and as early as 1820, apparently,

[45] Writing in 1865, Richard Pilkington, Jr., stated that, whereas squares measuring 40″ × 30″ could be cut from sheet glass, panes measuring 34″ × 22″ at the very most could be obtained from crown ("On the Processes and Mechanical Appliances in the Manufacture of Polished Sheet Glass," *Journal of the Franklin Institute*, 1865, p. 126).

[46] In comparison with present-day methods of drawing window glass in a continuous sheet directly from the furnace, the cylinder process produced vastly inferior panes. Since the inside circumference of the cylinders was less than the outside, the pieces naturally rippled when flattened.

[47] Cf. C. Hanford Henderson, "Glass-making," *Popular Science Monthly*, XXXIV (1888–89), 611. At the end of the century, crown glass came back into vogue for decorative windows.

[48] A large importing firm at Boston, of which Thomas Gaffield was a member, even ceased importing crown glass around 1857 because there was no demand for it (Gaffield, "Notes," IV, 156). And the manager of the Lenox plate-glass works wrote him on December 21, 1868, that "as Crown glass is not made in this country, of course, it is not necessary to say anything about that" (Gaffield, "Correspondence on Sunlight Experiments," I, 95).

[49] All except "paste molds" left seams on the bottle. Paste molds were simply metal ones sprinkled with water, oil, or charcoal before each blowing. Because of the lubricating effect which these substances had, the blower could slowly turn the bottle in the

three- and four-piece molds were being used in several places. Some were made of such hard woods as apple and beech, but these quickly burned away under quantity production, in spite of the fact that they were always dipped in water before each blowing. Hence, brass, copper, and particularly cast iron were increasingly employed in mold construction during the century.[50] Chilled-iron molds, introduced immediately following the Civil War, had a very smooth surface and consequently could be used without having to subject the bottles to a fire-polishing process in order to efface defects which were always imprinted by a coarser metal.

Regardless of the type of mold used, most bottles had to have their mouth formed by an individual working with hand tools. After the bottle was taken from the mold and before it was cracked off the blowpipe, a pontil was stuck to the center of its base. This allowed the worker to manipulate the red-hot bottle during the finishing process. Sometime between 1850 and 1860 the pontil was replaced by a snap case, which fitted around the body of the bottle and thereby left no disfiguration at its base. The threads and mouth of screw-top jars,[51] however, had to be formed in the original mold, and such containers did not pass through a finishing process like other bottles. The jagged edge left when the pipe was broken off was simply ground away after the jar had been annealed.[52]

C. PRODUCTION OF TABLEWARE; THE INTRODUCTION OF PRESSING

The method of blowing tableware in 1880 demanded much more skill than any of the other techniques, and it was in this branch that the individuality and artistry of each workman found their greatest expression. The various processes and tools did not differ from those which the famed Venetian craftsmen had employed centuries earlier, but the finished American goblet, bowl, or pitcher was considerably less artistic and much sturdier than the pieces fashioned during the Renaissance. When glass is being worked, it has to be in a viscous state so that the artisan can blow, shear, and shape it practically at will. At the beginning of the nineteenth century all glassware for table and other domestic use was blown,[53] but within a few decades this state of affairs was to be altered in an almost revolutionary manner. Pressing, the most important innovation in forming glass during the period preceding 1880, was introduced in the 1820's.

The technique itself had probably been used by the ancients, and European glassmen apparently "rediscovered" it during the last years of the eighteenth and first two decades of the nineteenth centuries.[54] Various shops in the United

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mold as he blew and hence avoid all seams on his finished product. Obviously, paste molds were practicable only when the bottle or other object blown was perfectly cylindrical and of a smooth surface.

[50] Brass and copper molds were much too expensive for most bottle-shops; they were used more in patterned pressed and blown tableware (see, e.g., Mrs. Ruth Webb Lee, *Sandwich Glass: The History of the Boston and Sandwich Glass Company* [2d ed.; Framingham Centre, Mass., 1939], p. 87).

[51] These appeared on the market during the latter half of the century. Mason's famous patent was issued on November 30, 1858, for the present-style screw-top fruit jar. I am indebted to my colleague, Robert L. Bishop, for lending me material on this subject which he collected while working on twentieth-century developments in the glass-container field.

[52] This procedure had been adopted even earlier than 1850 for jars whose wide mouth could not be shaped very easily with hand tools.

[53] If no pattern or form mold was used, the object was designated as "offhand"; otherwise, it was said to be "mold-blown."

[54] Much controversy has arisen over this point (cf., e.g., Davis, *op. cit.*, p. 101, and McKearin, *op.*

States have been credited by different writers with introducing—if not inventing—the process, but it now appears that the first American pressed ware was made by the New England Glass Company shortly after 1820. This was several years before the legendary carpenter was supposed to have confronted Deming Jarves at the Sandwich plant with the startling proposal to press instead of blow a queerly shaped piece of glass which he needed. Whatever the origin of the principle, the side-lever press—operated by hand until much later than 1880—was an American product; and glasshouses in the United States were unquestionably responsible for the perfection of the technique[55] and its widespread use in quantity production.

The basic process was quite simple. A gob of metal was sheared off the gathering rod and allowed to drop into a mold. A plunger was then brought down by means of a hand lever and forced the glass around the interior of the mold. The main disadvantage of this method arose from the fact that glass, in a viscous state, loses much of its brilliancy when it comes into contact with metal. Hence, the molded object had usually to be reheated enough at the furnace to regain some of its sparkle but not enough to efface its form or pattern.[56] Sometimes it was possible to affirm that pressed ware with delicate lacelike designs was scarcely distinguishable from blown except to the experienced eye.

On the other hand, pressing had at least two distinct advantages. Since thousands of identical copies could be made from the same mold within a few weeks, more expensive and intricately engraved molds were economically feasible than when blow molds were used. Near the middle of the century Jarves estimated that American factories had up to two million dollars invested in pressing machinery and molds alone.[57] Secondly, relatively unskilled labor could be substituted for highly paid blowers.[58] As a result of these two advantages the common run of tableware was more beautiful—though more standardized—and also less expensive than it had formerly been. Definite information which would permit a comparison of the costs of production is wanting, but Jarves claimed that "the tendency .... has been so to reduce the cost .... that it has multiplied the consumption at least tenfold."[59] Certainly, no branch of the industry prospered as much as the tableware division in 1830–80, and Pearce Davis has concluded that it led all others in technical improvements in 1861–90.[60]

D. PRODUCTION OF ROUGH AND POLISHED PLATE GLASS

The process of casting plate glass—the only major *forming* technique which has yet to be considered in this paper—

cit., pp. 333–34, with Gillinder, *op. cit.*, pp. 278–79; Weeks, *op. cit.*, p. 58; and Charles Colné, *Paris Exposition, 1878: Glass and Glass Ware* [Washington, 1881?], p. 387). Several Britishers after 1850 gave America credit for originating the process (see George Dodd, *The Curiosities of Industry: Glass and Its Manufacture* [London, 1853], p. 15; and *Mechanics Magazine* [London], November 18, 1871, p. 395); but Deming Jarves, whom several people have erroneously credited with the invention, himself admitted that square feet for stemware and certain kinds of bottles, as well as ordinary salts, were pressed in European houses at an earlier date than any sort of glass in the United States (*Reminiscences*, pp. 93 ff.).

[55] The pioneer firms appear to have been the Bakewell and the James B. Lyon companies at Pittsburgh and the New England and the Sandwich companies in Massachusetts.

[56] The technical term for this operation was "fire-polishing."

[57] *Reminiscences*, p. 94.

[58] See below, p. 213.

[59] *Reminiscences*, p. 86.

[60] *Op. cit.*, p. 220.

was borrowed in its entirety from Europe. During the last quarter of the seventeenth century the French had learned to roll or cast plate on a large table,[61] and entrepreneurs in other countries had followed the method closely. No important technological change had been effected by 1850. This was about the time that a few Americans first attempted to make rough plate. With the aid of grapplers, carriers, and chains the glass was taken from the melting furnace either directly in the melting pots or in smaller crucibles into which it had first been ladled; then it was poured on the smooth top of a casting table and spread out by means of a large chilled-iron or copper roller;[62] and finally it was pushed into an annealing oven and allowed to cool gradually.[63] Relatively few workmen were required for these operations, and nearly all were less skilled than blowers. Hence, at first glance, it would appear somewhat unexpected that this process of making plate was not adopted at an earlier date in the United States, because industries requiring little skilled labor and much machinery were usually the ones in which American entrepreneurs were able to compete effectively with foreigners. The real explanation involved other considerations. Casting equipment occasioned a much greater outlay than was needed to make other kinds of glass;[64] glassmakers themselves could not supply sufficient capital, and outsiders were reluctant to invest in the industry. Furthermore, success seems to have hinged to a marked degree upon the organization and direction of the working force, and Americans had had no previous experience with this type of production. Probably more important than these reasons was the fact that casting was economically feasible only if operations were on a large scale, and the American market for unpolished plate during the first half of the nineteenth century was not very extensive.[65] As late as 1867, it was said, even the comparatively small Lenox plant could supply the entire domestic demand for rough plate.[66]

The machinery for grinding and polishing such glass required additional large investments and also demanded the services of many unskilled workmen.[67] Hence no American plant made finished plate in commercial quantities until after 1870. And then a good part of the grinding and polishing machinery was imported from Europe, even though some of the equipment used there was apparently of American origin.[68]

E. PRODUCTION OF FLINT AND LIME GLASS

Even if glassmen in the United States made no significant contribution to the

[61] See my "Large-Scale Production in the French Plate-Glass Industry, 1665–1789," *Journal of Political Economy*, L (1942), 693–95.

[62] As late as 1884 the roller in American plants was equipped with handles at either end and was pulled over the molten metal by two strings of workmen. European factories had long discarded this backbreaking practice of moving their rollers in favor of a windlass-and-chain mechanism (Davis, *op. cit.*, pp. 250–51).

[63] Three of the four American factories in 1876 used stationary casting tables and had to shove the plates onto a rickety rolling table in order to get them to the mouth of the various annealing ovens. The best European plants, meantime, were employing mobile casting tables, which could be run on rails up to the ovens (Gaffield, "Scraps," I, 123).

[64] See above, p. 199.

[65] Rough plate was used for skylights, sidewalk lights, church windows, and other things requiring thick, translucent panes.

[66] Gaffield, "Notes on Glass," IV, 166.

[67] Gaffield, "Glass Journal," I, 190. Very little mirror glass was made in this country because it had to be polished by hand (Clark, *op. cit.*, II, 502). The low wages paid her unskilled labor enabled France to control the mirror trade for a long time (*Boston Commercial Bulletin*, June 17, 1874, in Gaffield, "Scraps," I, 51).

[68] Colné, *op. cit.*, p. 336; Davis, *op. cit.*, p. 251.

technology of casting and finishing plate, the introduction of the processes must still be ranked as an outstanding innovation. So must the development of flint manufacture. As far as its composition was concerned, flint[69] differed from ordinary glass in two ways: (1) red lead (or litharge) was used in its batch (from 30 to 50 portions for every 100 of silica); and (2) the other ingredients—fine white sand, potash, and lime—were of the best possible quality. The preparation of these materials required much labor, and the batch had to be melted in hooded crucibles in order to protect the metal from injurious fumes and smoke. From 1808 to 1864 American producers made flint glass in ever increasing quantities, most of it appearing on the market after 1830 as pressed tableware.

In 1864, however, an improved kind of lime glass which almost immediately captured this field was developed by William Leighton, Sr., of J. H. Hobbs, Brockunier and Company at Wheeling, West Virginia. After long experimentation Leighton succeeded in making a beautiful crystalline glass by substituting bicarbonate of soda for poor grades of soda ash and by perfecting the proportions of all materials. The resulting product had neither the weight nor the resonant ring of glass containing lead, but it was almost as brilliant and considerably cheaper.[70] Since it hardened sooner than flint, employees were forced to work faster, and a premium was placed on mechanical and organizational improvement around the shop. Lime-glass production expanded at the expense of flint during the latter part of the century and far outclassed in volume any other non-green glass made in the United States.

Finally, it should be noted, there was a tendency toward increased specialization of functions within each plant. Around 1800 each blower, regardless of what he made, had usually gathered, marvered, and shaped his own glass; and some in the window branch had even flattened and cut their cylinders. More and more these operations became sharply differentiated after 1820. The output per worker rose as a result of the accompanying division of labor, but available data are not sufficient to measure the increase. Much later, additional specialization in bottle-shops raised individual efficiency a great deal more. Instead of having each pot manned by one blower and his assistants, as had been the practice until shortly after 1870, three skilled blowers, aided by four helpers, were put to work at each pot. Two blowers gathered and inflated bottles while the third finished the mouths and lips for the other two. Partly as a result of this change to the so-called "shop" system, the daily output per worker more than doubled between 1870 and 1905.[71]

IV. TYPES OF FURNACES AND OTHER EQUIPMENT USED

The technological developments considered thus far have concerned either the working of glass or its composition. Attention must now be directed to those innovations which related to fuel, furnace construction, and type of equipment.

Abundant and easily accessible forests provided fuel for all the early glassworks

[69] The name "flint" was really a misnomer. English glass-manufacturers had first made crystal by pulverizing flints; then after the early part of the seventeenth century, when they began to use litharge as a flux along with ordinary silica, they retained the term.

[70] Lime-glass batch cost only about one-third as much as flint (Clark, *op. cit.*, II, 500). In 1923 M. J. Owens testified in court that lime batch cost 1 cent per pound, whereas lead batch cost 3¼ cents per pound.

[71] Davis, *op. cit.*, p. 205.

in this country because pine and oak, kiln-dried and split into small sticks, produced an intense fire at extremely low cost. A majority of the melting furnaces continued to burn wood until about the middle of the nineteenth century,[72] and annealing ovens did so much later. Sometimes resin or pitch—either alone or with wood—was burned during the melting or the working process. As had happened centuries earlier in England, local supplies of wood eventually failed, and increasing numbers of entrepreneurs were forced to cease work or to turn to mineral fuel.[73]

The first American glasshouse to use soft coal was built by Major Isaac Craig and General James O'Hara at Pittsburgh in 1796–97, and until after 1810 none outside that area followed its example. With the opening of the Virginian and Cumberland mines, ample supplies of bituminous coal became available, and even some of the best flint-glass factories burned it. The use of anthracite also began in some places during the 1850's, in spite of the fact that it required a stronger draft than bituminous. By 1860 there was only one furnace in New England which continued to burn wood,[74] and a similar shift in fuel was fast taking place in all other glassmaking areas.

In some respects coal was less desirable than wood. Its use increased the cost of constructing furnaces because tunneled drafts and expensive understructures were necessary.[75] And when fans propelled by steam were employed to build up intense heat,[76] the pots were cut and the life of the furnace shortened.[77] The New England Glass Company sought to avoid such difficulties and yet obtain a sufficient draft by building a huge chimney 235 feet tall. Other drawbacks of coal, especially bituminous, were that its smoke and fumes impeded work around the shop and colored the glass unless hooded pots were used in melting. Coke, resin, or wood, consequently, were burned in the working hearths, the flattening ovens, and the annealing ovens and lehrs. All the disadvantages, however, were outweighed by the relative cheapness of coal and the possibility of obtaining a very high furnace temperature if adequate drafts were used.

An innovation which must be ranked in importance with pressing and the improvement of lime glass was the gas furnace. The first one of any importance in glassmaking was developed by C. W. and Frederick Siemens and installed in an English sheet-glass factory in 1861.[78]

[72] The numerous works in South Jersey, for example, chiefly burned wood until after 1855, when they began to use anthracite (see Gaffield, "Glass Journal," I, 178, 214; II, 94–95; Weeks, *op. cit.*, p. 97).

[73] Weeks reported in 1880 that "the fuel used in glass-making in the United States is chiefly coal, though at all works more or less wood is used for various purposes . . . . [and] one or two [melting] furnaces . . . . are reported as being wood furnaces" (*op. cit.*, p. 4).

[74] Jarves, *Reminiscences*, p. 114; Lee, *op. cit.*, p. 62.

[75] Of course, entrepreneurs in this country did not have to develop the principles of such a furnace; they had only to copy European models, for coal furnaces had long been used in French and English glasshouses (see my "Technology and the French Glass Industry, 1640–1740," *Journal of Economic History*, I [1941], 158 ff.).

[76] Gaffield, "Glass Journal," I, 17. All coal furnaces were not blast furnaces, and available data are insufficient for dating the first application of the blast principle in glassmaking and for gauging the extent of its popularity. Many factories, however, used a blast.

[77] *Ibid.*, I, 5–6. The greatest damage was done when new coal was put on the fire. Jarves' Cape Cod works and a few others adopted a special stoking device which pushed the fuel up through the glowing coals (Davis, *op. cit.*, p. 84; Gaffield, "Glass Journal," II, 22–23; Gillinder, *op. cit.*, p. 279; Jarves, *Reminiscences*, p. 113).

[78] Gaffield, "Glass Journal," I, 85–86; Harry J. Powell and Others, *The Principles of Glass-making*

At first it did not operate with any great economy,[79] but by 1876 various improvements had induced at least 81 European houses to adopt it. Other furnaces which differed somewhat in principle had also been developed and introduced abroad on a wide scale.[80]

Only a few glassmakers in the United States followed the example of producers in England, France, and Germany.[81] Out of a total of 348 melting furnaces in 1880, only 21 burned gas, and this number included not only the Siemens but also the Gills, Nicholsons, and other American variations of European models.[82] The first Siemens furnaces in the United States were constructed at Pittsburgh in 1863 by Park, McCurdy and Company (for refining copper) and by James B. Lyon and Company (for melting flint glass).[83] The Siemens model gained wide acceptance sooner in ironmaking and steelmaking than in glass. Only three houses in the glass industry experimented with it before 1870,[84] and not one of these could proclaim it an unqualified success. Ten years later a few progressive firms in every branch save window glass had been completely won over by the merits of heating with gas.

The Siemens principle in 1861 embraced a regenerative furnace (which was, in fact, its distinctive feature) and a separate unit for converting solid to gaseous fuel. The regenerators of each furnace were two pairs of firebrick checker-works, through one pair of which the gas and air flowed into the furnace, and through the other of which they passed from the furnace after combustion into the chimney. A reversing valve was so arranged that the flow of gas and air before and after combustion could be switched from one regenerator to the other. This meant that the gas and air before entering the furnace were heated through contact with the brickwork, which had previously absorbed the waste heat of the exhaust gases. In other words, the regenerative chambers were designed to save the heat which otherwise would have been dissipated through the chimney and to utilize it to preheat the gas and air before they were ignited in the

(London, 1883), p. 110; *Mechanics Magazine* (London), November 18, 1871, p. 395; Weeks, *op. cit.*, p. 36. Somewhat later its principles found wide application in the iron and steel industry.

[79] Henry Chance wrote on December 24, 1867, that his firm had six Siemens furnaces at its Birmingham works but that there was no appreciable saving in fuel. "In all other respects the furnaces are satisfactory" (Gaffield, "Correspondence on Sunlight Experiments," I, 75).

[80] Powell and Others, *op. cit.*, p. 110. Of 600 glass furnaces in Germany at the end of 1877, it was reported that 336 were heated with gas (Gaffield, "Scraps," II, 185).

[81] R. M. Atwater, "The Glass-making Industry in America," *Engineering Magazine*, IV (1893), 884. Gaffield, with reference to the Siemens furnace, observed on February 14, 1865: "We find that, as with all other useful inventions and discoveries, industry, time, and patience are necessary for their successful introduction" ("Glass Journal," II, 65).

[82] Weeks, *op. cit.*, Table VI. Not all of the 21 were in actual operation in 1880. Some were lying idle, whereas others were under construction.

[83] In 1862 Thomas Gaffield had visited England to confer with C. W. Siemens, who, along with his brother Frederick, held the basic patents issued in 1861, apropos of introducing the furnace in this country. Gaffield, Tuttle and Company was issued the first U.S. patent on March 1, 1864; but sometime in 1869–71 its interests were sold to a group of construction engineers at Philadelphia (Gaffield, "Copies of Letters," I, 149–50; "Glass Journal," I, 41–42, 176, 187, 218, 264; II, 37–38).

[84] James B. Lyon and Company at Pittsburgh, the Lenox Plate Glass Works in Massachusetts, and Burgin and Sons at Philadelphia (Atwater, *op. cit.*, p. 884; Clark, *op. cit.*, II, 72; Gaffield, "Correspondence on Sunlight Experiments," I, 91; "Glass Journal," I, 275–76, 284–85; II, 28, 173; "Glass Making," Vol. VI; "Scraps," I, 12–14, 28–30). Apparently, James B. Lyon and Company operated its furnace less than a year.

melting chamber.[85] That the regenerators permitted some economies in fuel was not seriously questioned after the first model was improved upon; but the Siemens system had at least three drawbacks: (1) tar formed on the brickwork and had to be cleaned away and burned every so often; (2) the gas did not give a uniform heat, since its own temperature rose and gradually declined each time the reversing valve directed its course through the other regenerator;[86] and (3) the checker-work chambers could not be added very easily to converted coal furnaces. The fact that entirely new melting units had to be built undoubtedly deterred many Americans from adopting the regenerative principle.

The other gas furnaces developed in Europe or modified in the United States were designed to avoid these disadvantages. Apparently not one of them used as little fuel as the Siemens, but their gas producers and flues could be installed with much less expense because only slight changes had to be made in the old furnaces.

Any sort of gas furnace, however, was definitely superior to the ones which were fired directly with coal. Since gas makes little or no mess when burned, the glass in the pots was not discolored by smoke or pyrite fragments hurled from the fire pit, and the whole working area about the shop could be kept clean. The life of both pots and furnace walls was considerably extended by the substitution of gas for coal, because the latter, especially in blast furnaces, yielded a very corrosive fire. Furthermore, the heat from gas was intense, relatively uniform, and easily regulated. The temperature could be quickly raised for melting and refining the metal and then lowered for working it. Economy of fuel was perhaps the most important advantage claimed for gas furnaces. Not only did they consume smaller quantities of coal than the direct-firing type, but also the cheapest grades could be burned in their gas-producers.[87] Consequently, the cost of coal, previously accounting for about one-third the variable costs of melting glass, could be reduced by 40–60 per cent with the Siemens and by 30–50 per cent with the other gas models.[88]

Natural gas did not become an important factor in the industry until after 1880. The Rochester tumbler-works near Pittsburgh appears to have been the first to burn it. Around 1875 this company sank a well 968 feet deep, which yielded enough gas to heat its annealing ovens but not enough to keep one of its converted coal furnaces lighted except for a few months in 1875–76. The opening of the great Pittsburgh and Middle Western gas fields several years later stimulated the expansion of glassmaking in a way unparalleled previous to that time. Petroleum and its derivatives likewise played little or no part in the industry's growth before 1880, even though a few plants had already burned small quantities of benzine, naphtha, or crude oil in their auxiliary hearths.

[85] Gaffield, "Glass Making," Vol. VI. It was said that the gas and air could be raised in this way to a temperature approaching 3,000° F.

[86] Charles Tock, "Note sur les différents systèmes de fours employés dans la fabrication des verres à vitres," *Revue universelle des mines, de la métallurgie, des travaux publics, des sciences et des arts appliqués à l'industrie*, XXXIX (1876), 579–80, 596–97.

[87] Weeks, *op. cit.*, p. 37. Hobbs, Brockunier and Company at Wheeling, W.Va., in 1879 was getting slack at 30 cents per ton, or the cost of carting it from the mines to the furnace (Gaffield, "Glass Journal," III, 247).

[88] Tock, *op. cit.*, pp. 556, 579; Colné, *op. cit.*, pp. 332, 353, 356; Gaffield, "Glass Journal," I, 275–76; "Scraps," I, 91, 94, 160; Weeks, *op. cit.*, p. 36 and note.

A change far more widely evidenced than the shift from solid to gaseous fuel was the marked increase in furnace and pot capacity. During the first half of the nineteenth century most American houses had had a furnace of only six pots, each of which had held 600 or 700 pounds of metal; by 1861–80 the ten-pot furnace was quite common, and the capacity of each pot was between 2,500 and 3,000 pounds.[89] The number of weekly meltings, moreover, had at least doubled.[90] These facts suggest that the typical furnace engaged in bottle and tableware production in 1880 probably turned out fourteen times as much glass each week as the small ones had melted near the beginning of the century.[91]

Tank furnaces did not really begin to supplant pot furnaces in this country until the 1890's.[92] The Anglo-American Glass Works at Poughkeepsie, New York, in 1879–80 was the first in the United States to build and operate successfully a continuous tank. Only three or four so-called "day tanks"[93] had been in use for a few years before this in as many bottle- and tableware-shops. In 1880, throughout Europe, eighteen Siemens' gas furnaces were equipped with continuous melting tanks, and six others had day tanks. With very few exceptions American producers continued for another decade to ignore the marked superiority of continuous tank furnaces over those holding pots.[94]

Very little improvement was also evidenced in the construction of annealing ovens, which were employed to reduce the strains and stresses occasioned in all ordinary glass products by unequal and uncontrolled cooling.[95] Such ovens ordi-

[89] The data substantiating these generalizations are far too numerous to warrant specific reference here to their sources.

[90] A coal fire melted and refined glass in less time than wood, and gas was even faster than coal.

[91] The pot furnaces at the Rochester (Pa.) Tumbler Company—said to be the largest in the country—in 1877 would each hold 20 tons of metal at one time (Gaffield, "Scraps," I, 98, 160). The increase in the capacity of window-glass furnaces had been appreciably less than fourteen fold.

[92] The first continuous tank furnace for melting glass was patented in England by the Siemens brothers in 1870. Its basic principles were almost identical with those of the open hearth in steel.

[93] Day tanks melted and refined metal at night and were worked during the day. Their capacity (about 10 tons) was much less than that of continuous tanks (Harry S. Hower, "Some Scientific and Technological Contributions to the Glass Industry in the Pittsburgh District," *Western Pennsylvania Historical Magazine*, XVIII [1935], 36).

[94] Melting costs per ton of glass were halved; continuous melting, refining, and working were possible at the same time; tanks lasted longer than pots; the entire furnace was subjected to less wear and tear because of the constant temperature; fewer men were necessary to tend the furnace; and better hours and conditions of work could be arranged for the blowers and pressers (Gaffield, "Glass Making," Vol. VI; Walter Rosenhain, *Glass Manufacture* [New York, 1908], p. 72; Weeks, *op. cit.*, p. 38). Flint glass, however, cannot be melted in tanks because direct contact with gas fire reduces lead and produces dark glass; and pots remain the only practical method of melting several different kinds or colors of glass in the same furnace (Charles Reinhard Fettka, *Glass Manufacture and the Glass Sand Industry of Pennsylvania* [Harrisburg, Pa., 1919], p. 119; Rosenhain, *op. cit.*, p. 72). Even the tank furnace had an efficiency (heat utilized/heat applied) which rarely got above 25 per cent, seldom exceeded 15 per cent, and might have been as low as 5 per cent. Nonetheless, it was by far the most efficient glass furnace theretofore devised (Phillips, *op. cit.*, p. 151).

[95] Patents on tempered or toughened glass were taken out in the United States on December 15, 1874. Such glass was made in the usual manner, then reheated, and suddenly plunged into an oleaginous bath. This procedure imprisoned the strains and stresses under great surface compression. Such glass was harder to fracture than ordinary annealed glass; but, once the slightest fracture was made, the glass "exploded." For centuries glassmakers throughout Europe had observed such phenomena in Prince Rupert's drops, but none of them—before a Frenchman named De la Bastie in the 1870's—had seen an opportunity for commercial profit. One or two attempts to make "La Bastie" glass in this country were not very successful (Gaffield, "Glass Journal," III, 71, 81, 121, 162, 163; "Scraps," I, 54, 57, 101).

narily were square, squatty affairs which were first heated (most often with wood), then filled with glassware, and finally closed up to cool. Obviously, they entailed considerable wastage of floor space, time, and heat; but only a few American factories before 1880 had begun to experiment with a more efficient annealing device called the "lehr." Lehrs were long, tunnel-like structures through which glass was slowly drawn in iron pans, hooked together in a sort of train. Since the entrance of the lehr was constantly heated and the other end was kept at shop temperature, bottles and other items could be packed as soon as they emerged from it. That lehrs, in spite of their superiority as savers of time, space,[96] and fuel, did not replace the old-type oven in most shops until well after the period now being studied is just another indication of the backwardness of American producers in matters of technology.

Nearly all tableware and container shops used some sort of small hearth—a glory-hole or warming-in oven—where glass was reheated at various times while the workman was shaping it. And some window-glass plants, imitating those in England, gave separate blowing or working furnaces a trial during the 1860's.[97]

V. LABOR AND LABOR CONDITIONS; COMPARATIVE WAGE LEVELS

From the survey of technological developments it is apparent that the five outstanding innovations were (1) the perfection and mechanization of pressing, (2) the improvement of lime glass, (3) the shift from wood to coal as fuel, (4) the beginning of rough and polished plate manufacture, and (5) the introduction of producer-gas furnaces. The industrial effects of the last, however, did not become important until after 1880. Small-scale production continued to be characteristic of most plants in the bottle, window-glass, and tableware divisions.[98] Even though the industrial and technological patterns of growth were definitely interrelated, a complete understanding of each is still lacking. The scale of operations of individual works, for example, does not *wholly* account for the slow rate of change in technical procedures or for the relatively backward state of glassmaking in America as compared with certain European countries. Neither was the state of technology *entirely* responsible for the character of the industry. Other factors also influenced the rate of growth.

Labor was significant because a high degree of skill was required in the work[99] and because wages constituted a very large part of the total costs of production. According to the returns of the 1850 census, payments to labor amounted to about 43 per cent of the value of all glass made.[100] Calculations for 1850 and 1870

The same basic principle of tempering or toughening has today been perfected and used in making such items as "safedge" tumblers (by the Libbey Glass Company) and thick plate-glass doors.

[96] Hence, they economized capital. Ovens ordinarily took days to cool, whereas glass was annealed while passing through lehrs within eight or ten hours.

[97] At first, many producers found the separate blowing furnace too expensive and reverted to the system of reheating the glass over the melting pots (Gaffield, "Glass Journal," I, 172; II, 64, 261). But the separate furnace was adopted generally in this branch during the 1880's (Davis, *op. cit.*, p. 162).

[98] The few plate-glass factories built in 1869–80 were very much larger than the average shop in these branches.

[99] Ordinary pressers and casters were semiskilled.

[100] Weeks, *op. cit.*, Table VI. The importance of labor as an item in production costs varied somewhat according to the branch of the industry. Annual wage payments in 1880 were about 47 per cent

show this percentage to have been 45 per cent and 41 per cent, respectively; and the operating costs of the Boston and Sandwich Glass Company for four six-month periods in 1826–29 reveal that wages accounted for approximately 53 per cent of the total.[101] Most of the other data that have been collected suggest that at least two-fifths of the gross income of all shops (except those making plate glass) went as payments to workers.[102]

Nearly all the operations connected with gathering and blowing glass required consummate skill. For this reason it was long necessary for Americans to draw heavily upon European factories for their labor supply. Emissaries were sent to Great Britain to engage workers and shop foremen,[103] and many Belgian, French, and German glassmakers also had their passage paid by manufacturers who sought to improve or enlarge their working force.[104] Since blowers, after arrival, were extremely reluctant to impart their skill to greenhorns and since the number of furnaces lighted in the United States increased rapidly during the century, entrepreneurs as late as 1880 were still seeking men from abroad.[105] They were not always fortunate in getting reliable workers who could resist the great demand for their services. Many an employer, who had paid all travel expenses, found that he could not cope with the independence which immigrant glassmen soon acquired or keep them from going to work at higher wages elsewhere.[106]

Geographic mobility was not confined to immigrants. All glassmakers appear to have moved about from one shop to another to a greater extent than workers in other occupations.[107] Western furnaces were operated in part by individuals from Maryland, New Jersey, New York, and Massachusetts; and various managers and employees of the New

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of the total value of flint and lime glassware; 42 per cent of window glass; 40 per cent of the green (container) glass; and 34 per cent of plate. Weeks, in Volume XX of the *Tenth Census*, reported that for one flint-glass plant the "percentage of wages to cost for the entire production" was 33 per cent in 1877–80, and for another, 50 per cent in 1867–70 and 65 per cent in 1880 (pp. 83, 91); for a green-glass bottle-shop, 50 per cent in 1864–80 (pp. 99, 100). For other shops, 33 per cent and 50 per cent were most frequently given.

[101] Lee, *op. cit.*, pp. 58–60.

[102] Gaffield, "Scraps," II, 135, 156; "Notes on Glass," IV, 52. The census returns for 1860 place the fraction at one-third. Unquestionably, the glassmakers who reported to the Tariff Commission in 1882 that labor was about 90 per cent of total blown-glassware costs (Davis, *op. cit.*, p. 238) were guilty of gross exaggeration.

[103] In spite of the fact that her laws, until 1825, prohibited the emigration of artisans. Apparently, considerable risk was run and many ruses had to be employed to get the men out (Jarves, *Reminiscences*, pp. 58, 70; Knittle, *op. cit.*, pp. 169, 181; Gaffield, "Glass Journal," II, 207; Watkins, *op. cit.*, 163; McKearin, *op. cit.*, p. 101).

[104] The Winslow (N.J.) Glass Company had obtained its entire working force from abroad around 1863 (Gaffield, "Glass Journal," I, 214).

[105] *Ibid.*, III, 242; "Glass Making," IV, 24; "Scraps," II, 154; III, 60.

[106] "Scraps," I, 48; "Glass Journal," II, 2, 3, 64; William Bining, "The Glass Industry of Western Pennsylvania, 1797–1857," *Western Pennsylvania Historical Society*, XIX (1936), 258. Gaffield, speaking *ex parte*, observed that "English workmen are glad to come over to this country, but they act in a most shameful manner when here, where the laws regulating work and workmen are not so stringent as in England" ("Glass Journal," II, 111). "They have had their passage money paid, and after arrival, some have become intemperate, discontented, spent their wages, run in debt, left their employers, gone to other factories, and some returned to England" (*ibid.*, I, 261).

[107] Owing to the general scarcity of labor and the abundant opportunities for gaining a livelihood, all workers in America were much more mobile geographically and occupationally than those in Europe (Clark, *op. cit.*, I, 244). Glass-blowers, however, were loath to change their occupation.

England Glass Company, especially, helped establish the industry in other parts of the country. Employers sometimes traveled from one factory to another in an attempt to secure a sufficient working force for their own enterprise and left irate competitors and higher wage scales in their wake.[108]

That skilled glassmen were much better paid than common laborers or even most craftsmen in other industries has never been seriously questioned. Fortunately, Weeks, in Volume XX of the *Tenth Census*, has presented sufficient data to allow a comparison of the wages received by blowers, finishers, pressers, and flatteners in several shops located in different parts of the country with the daily earnings (1) of common laborers in the same localities and for the same years[109] and (2) of such artisans as painters, carpenters, blacksmiths, cabinetmakers and furniture carvers, machinists, shoe-leather cutters, temperers and forgers of cutlery, molders, and tobacco-sorters. Skilled workmen in the glass industry around 1870–80 received at least two, and most often three, times the wages of ordinary laborers employed in the same and other industries and from one- to two-thirds more than many skilled craftsmen. One writer asserted in 1896 that blowers had larger annual incomes than many learned professors and divines.[110] Such wage differentials, moreover, appear to have been even greater before the Civil War than after.[111]

Gatherers were less skilled than finishers, blowers, or flatteners and received about one-third or one-half less in wages. Soon after pressing was introduced into the tableware division, the men who operated the machines were not considered as glassworkers at all by other employees, and this difference in their status was reflected in their wages. From 1850 through 1863, for example, pressers at the New England Glass Company earned only one-half as much as blowers.[112] After 1865, however, this differential began to disappear, until competent pressers of flint and lime glass around 1880 received as much as, and in some shops even more than, blowers.[113] Finally, it should be noted that the workmen who participated in casting plate glass in those enterprises set up for this purpose earned in 1880 less than half as much as skilled glassmen in other branches of the industry. If they were employed in shops in Kentucky, Illinois, Indiana, Missouri, Ohio, and western Pennsylvania, pressers, finishers, gatherers, blowers, and flatteners in the same year received on the average about 25–30 per cent more than they would have obtained along the Atlantic Coast.[114] The differential was least in the lime- and flint-glass branch (15 per cent) and greatest in the window-glass (50 per cent for blowers). The situation in 1880 was not unusual.

The relatively high wage level in this country compared with European glass

[108] Gaffield's manuscript journals are replete with examples of such activity.

[109] When possible, the years 1880, 1870, 1860, and 1850 were selected for Boston, Philadelphia, Pittsburgh, St. Louis, Wheeling, and South Jersey. However, most of the comparisons were for only 1880 and 1870.

[110] Henderson, *op. cit.*, p. 609. Some blowers of green bottles earned as much as $300 a month around 1896.

[111] See below, p. 214.

[112] And no more than the gatherers (*Tenth Census*, XX, 81).

[113] *Ibid.* The New England Glass Company, however, still paid its blowers a third more than its pressers.

[114] Based upon wage data in *ibid.* Averages were struck for pressers, finishers, gatherers, and blowers in flint and lime; for blowers only in green bottles; and for boss-blowers, cylinder-blowers, gatherers, and flatteners in window glass.

centers was considered by entrepreneurs a much more serious problem than domestic regional differentials. They contended time and again that they had to pay two, three, and four times as much for skilled labor as their competitors did on the other side of the Atlantic.[115] Glass-blowers and finishers would certainly fall into that class of skilled operatives and artisans which, according to Clark, [116] was at the greatest premium in America before 1860; but it appears probable that the owners of American shops exaggerated their disadvantage. A United States consul in Belgium reported in 1878 that Belgian glassworkers were earning from $56 to $65 a month;[117] and comparable workmen in Ohio and around Pittsburgh probably received in the same year from $80 to $100 a month. This would mean that American wages were about one-half greater than Belgian. The Tariff Commission was told in 1882 that the differential for blowers of window-glass was about one-third.[118] At any rate, the amounts paid skilled glassworkers in the United States were high enough to constitute one of the important reasons why American producers operated under relatively disadvantageous conditions.[119]

It would be extremely helpful to know to just what extent the comparative wage situation around 1880 differed from what it had been before the Civil War, but, unfortunately, sufficient information regarding foreign wages is not available. There are enough data on domestic wages, however, to permit the construction of simple index numbers for the daily earnings of certain skilled glassworkers from 1841 through 1880, and these are presented in Chart I. For the earlier period—from 1800 to 1840—the trend was probably upward, although it is impossible even to estimate the percentage increase. In 1867 glassworkers' wages were approximately 58 per cent higher than in 1860,[120] and the indices show a decrease in real wages during the war period, if one concedes that wholesale prices reflect (but imperfectly) the cost of living.[121] The ratio of glassworkers' wages to wholesale prices increased by 37 per cent from 1841 to 1880, whereas a similar ratio for general wages indicates a rise of about 62 per cent. This meant that skilled glassmen, on the whole, during the four decades ending in 1880 saw the differential in their earnings as compared with those of other workmen constantly lessen.

Money and real wages, however, are not the only factors involved in the well-being of any group; hours and other con-

[115] See Davis, *op. cit.*, pp. 113, 238; Gaffield, "Glass Making," Vol. III: "Report on Glass Manufacturing in 1832"; "Scraps," I, 67; III, 122; Atwater, *op. cit.*, p. 887; Jarves, *Reminiscences*, p. 93; James Gillinder, "The Relation of Skilled Labor to the Successful Production of Pressed and Blown Flint Glass Ware," in *Papers Read before the Annual Meetings of the American Association of Flint and Lime Glass Manufacturers at Atlantic City, July, 1900 and 1901*, p. 33.

[116] *Op. cit.*, I, 390–91.

[117] Gaffield, "Scraps," II, 156.

[118] *Ibid.*, III, 122. Manufacturers of flint and lime glassware, however, reported to the same body that foreign wages were from one-half to three-quarters lower (Davis, *op. cit.*, p. 238).

[119] Cf. Davis, *op. cit.*, p. 141. Jarves wrote at the middle of the nineteenth century: ". . . . when the labor on glass constitutes its chief value, then glass can be imported cheaper than it can be manufactured in this country" (*Reminiscences*, p. 93).

[120] General wages rose by about 61 per cent. That glassworkers' wages increased slightly less than general wages conforms with W. C. Mitchell's findings (*A History of the Greenbacks* [Chicago, 1903], p. 318).

[121] Admittedly, retail prices of commodities are more significant than wholesale prices in indicating changes in real wages, and retail prices ordinarily move more sluggishly than wholesale. But Mitchell found that it did "not matter greatly which series is used" (*ibid.*, pp. 337–38).

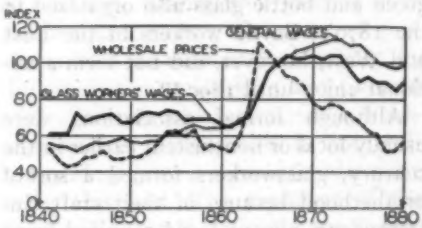
ditions of work are also significant. During the first decades of the nineteenth century, most glass-shops operated only 6 or 7 months each year, and employees worked at least 12 hours a day.[122] Around 1860 the furnaces were usually run 9 or 10 months, and in many places the 10-hour day had been adopted for those who worked glass. Twenty years later shops were normally inactive only 6 or 8 weeks in the summer,[123] and the working day had been shortened almost everywhere to 9 or 10 hours.[124] Hence it appears that during the period studied glassmen benefited from more continuous employment and enjoyed a substantial shortening of their working day.

Various other improvements in conditions of work were also effected. There was a tendency to pay employees every week or fortnight in cash rather than at the end of each month in certificates redeemable at the company store.[125] Piecerate wages became increasingly popular after 1860, and in some plants glass was only melted and not blown or pressed at night.[126] Better ventilation and more healthful conditions were attained in the workroom by placing chimneys over the furnace and by constructing more windows in the shop. Sometimes segments of the factory walls were built on pivots so that they could be swung open in warm weather.[127] Company-owned and employer-dominated villages gradually became much less common than during the first half of the century, when most glass enterprises had been practically self-contained communities.[128]

CHART I

GENERAL WAGES, GLASSWORKERS' WAGES, AND WHOLESALE PRICES IN THE UNITED STATES, 1841–80*

(Base = 1866)



* The general wage series is that given in Bureau of Labor Statistics, *History of Wages in the United States from Colonial Times to 1928* (Bull. 604). In order to facilitate the comparison, the index numbers constructed with 1913 as the base have been divided by the index for 1866. The glassworkers' index was compiled from wages paid pressers, finishers, gatherers, blowers, cutters, and flatteners from nine different factories (*Tenth Census*, Vol. XX) and from wages paid blowers of window glass and five different sizes of green bottles (*Wholesale Prices, Wages, and Transportation* [a report prepared by Aldrich for the U.S. Committee on Finance] [Washington, 1893], IV, 1566, 1572; hereafter referred to as the "Aldrich Report"). The smallest number of relatives for any one year was 6 (for 1841–44), and the largest was 38 (for several years following 1865). The wholesale price series is that given in George F. Warren and Frank A. Pearson, *Prices* (New York, 1933), with the indices divided by that for 1866.

Few of these ameliorations were occasioned by united action on the part of glassworkers, for unions did not become

[122] Most of the following remarks regarding time worked are supported by information given in the *Tenth Census*, XX, 78 ff.; in Gaffield, "Glass Journal," I, 173; II, 43; III, 241; "Scraps," I, 15; and in Weeks, *op. cit.*, p. 90.

[123] Some, in the tableware division, maintained production the year round.

[124] The 7-day week did not become common until the twentieth century; during the nineteenth, 6 and sometimes 4 or 5 days constituted the working week (Davis, *op. cit.*, p. 229; Knittle, *op. cit.*, p. 226; Lee, *op. cit.*, p. 63; Watkins, *op. cit.*, p. 26; Gaffield, "Glass Journal," I, 8–9).

[125] *Tenth Census*, XX, 78 ff. In 1880, 27 glassworks still maintained company stores as against 146 which reported no store. Many of the 27 stores were kept only as an accommodation with no obligation to trade there; but Weeks reported that "this question of 'truck' is [still] a burning one between employer and employed" (*op. cit.*, p. 9).

[126] Dyott, *op. cit.*, pp. 19–20; Gaffield, "Scraps," II, 118. Some of the flint-glass plants worked 24 hours a day, and their employees rotated in either 6- or 12-hour shifts (Chipman, *op. cit.*, pp. 38–39; Lee, *op. cit.*, p. 63; *American Artisans*, April 17, 1867, p. 371).

[127] Especially the bottle-houses in South Jersey.

[128] See Chipman, *op. cit.*, pp. 23, 27–28; Gillinder, "American Glass Interests," p. 275; Gaffield, "Glass Journal," I, 19; II, 94–95; "Scraps," I, 124, 162; II,

strong until about 1880.[129] Local organizations existed shortly before and during the Civil War, but nearly always these were short-lived.[130] In either 1877 or 1878 a local gatherers' union in the Pittsburgh window-glass branch joined the Knights of Labor as Local Assembly 300, and by 1881 it was said to have enrolled in its membership nearly all blowers of window glass throughout the country. The American Flint Glass Workers' Union of North America resulted from the first successful national convention held by flint workers at Pittsburgh in 1878; and employees in shops making green and bottle glass also organized in the 1870's. Bottle workers in the East and West, however, did not form a national union until 1890.[131]

Although formal associations were usually local or nonexistent earlier in the century, glassworkers formed a sort of brotherhood because of their craft. Entrepreneurs always faced a united front on the part of their employees when attempts were made to reduce wages, increase output, introduce new techniques, increase the number of helpers, or reorganize in any way the work about the furnace. Employers consequently claimed that they were not masters in their own shops and that the most dissolute[132] and independent workers determined the pattern of conduct for the others.[133]

Their antipathy to innovations was partly responsible for the little progress achieved in technological improvement. Deming Jarves wrote a friend:

> The glass blowers, on discovery that I had succeeded in pressing a piece of glass, were so enraged for fear their business would be ruined by the new discovery, that my life was threatened, and I was compelled to hide from them for six weeks before I dared venture in the street or in the glass house, and for more than six months there was danger of personal violence should I venture in the street after nightfall.[134]

Again, in the 1870's, workers in lamp-chimney shops refused to use a patented device for crimping the top of chimneys and went out on strike for twenty-five months. The continuous melting tank likewise met with resistance in every branch of the industry because its introduction would necessitate considerable reorganization of work about the furnace.[135] To realize its potential economies, glass had to be melted and blown at night as well as during the day.

[*To be continued in the December issue.*]

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154, 193; McKearin, *op. cit.*, pp. 100–101, 183–84, 185; Knittle, *op. cit.*, pp. 93–94, 185; Lee, *op. cit.*, pp. 25, 34, 65, 486; Thurston, *op. cit.*, p. 143; Watkins, *op. cit.*, p. 159. Thomas Dyott tried to establish at his Kensington works near Philadelphia a system of "moral and mental labor" rather similar to that of Robert Owens at New Lanark (*op. cit., passim*).

[129] The great control which some of them (especially window glassworkers in 1890–1903) exercised upon wages, output, apprenticeship, and working conditions, therefore, does not fall within the scope of the present essay.

[130] See Davis, *op. cit.*, pp. 107, 175, 206–7, 226. There was, however, a sharp increase in the number of strikes during the 1860's and 1870's.

[131] *Ibid.*, pp. 176, 207–8, 226.

[132] Intemperance seems to have been an unusually common failing of employees, and sometimes the men would not show up at the factory for days.

[133] Jarves, *Reminiscences*, pp. 24, 70; Gaffield, "Glass Journal," I, 165.

[134] From an extract of a letter displayed at the Philadelphia Centennial in 1876 (Gaffield, "Scraps," I, 95). This sort of reaction to innovations which imperiled their position, of course, was typical of craftsmen in most industries.

[135] Davis, *op. cit.*, p. 202. The transition in fuel from coal to gas evoked little resistance, probably because glassworkers received immediate benefits in the form of cleaner conditions about the shop and because they did not have to change their own manner of work.

RECENT TRENDS IN THE GERMAN COMMAND ECONOMY

HEINZ PAECHTER

IN SEPTEMBER, 1943, an "*Erlass* of the Fuehrer" concentrated control of the German war economy in the hands of Professor Albert Speer, Reich minister and general deputy for armament and war production, placing under his direct jurisdiction half of all German industrial plants, among which were the biggest and most powerful trusts. It cannot be doubted that supra- and extra-entrepreneurial control of business in Germany is wider in scope and closer to the individual operation of producing or distributing than in any other country, perhaps even than in Russia. There has, however, been a remarkable tendency toward decentralization of the agencies of control; and it seems as though the trend toward ever closer and tighter control which is inherent in war economy required a technical machinery of supervision independent of the central state authorities. The closer actual control is, the less have central authorities been able to exercise the full power which the law gave them, and after each climax of centralizing legislation there has been a counterstroke of regional and trade-branch power offsetting the movement toward state capitalism or bureaucratic administration of industry. These superseding movements are connected in no accidental manner but are closely tied up.

It is, therefore, not sufficient to describe the extent of control and supervision; in order to understand the working of the present German organization of industrial control it is necessary to know who exercises the control and what kind of machinery he uses.

I

The importance and extent of industrial control are well known, and we need only point out the four dimensions in which it increases.

1. Geographically, the expansion of German business into occupied and Axis-allied countries has carried the exploitation of their resources far beyond the stage of looting and imposition. European economy is being so organized as to fit into the German "living-space" program. It is administered conjointly by the occupation authorities and German business firms, which have secured monopolies and participation in key positions. Moreover, economic frontiers are being abolished. The president of the German Economic Group for the Textile Industries is a manufacturer in Lodz; Belgian, French, and Luxemburgian mining companies have merged into a syndicate under German law; customs barriers have been dropped between Germany and certain occupied regions.

2. The number of goods whose production and distribution are controlled has increased beyond imagination. Milk can be delivered only in the producer's *Markteinzugsgebiet*—the regional outlet assigned to him. Enamelware can be repaired only after a priority has been secured, and new pieces will not be delivered to the *Leithändler*—a semiofficial broker—before the *Landeswirtschaftsamt* is satisfied that the housewife's old pot is beyond repair. Toys are available on purchasing permits.

3. More important than the mere number of controlled goods is the variety of the control functions which are involved

in each case. Planning has outstepped the stage where it was restricted to output and equalization of distribution. The authorities now plan who shall produce what, with what material, and at what cost for whom. Standard types are prescribed, and their production is assigned to the most convenient producer, the original inventor being under obligation to make the "know how" available. The *Frankfurter Zeitung* (October 25, 1942) says:

> Many factories have been compelled to give up models or brands [*Konstruktionen*] which often had been identified with the name of the firm. Others had to make their experience available to former competitors. In return, they get the most efficient utilization of their capacity.

Standardization and "rationalization"[1] have slashed the number of available goods. The types of axes have been reduced from 5,000 to 60; out of 180 types of fountain pens only 2 are left; 65 per cent of all types of metal-processing machines are no longer produced; the number of rolling mills was reduced from 150 to 6; only 26 per cent of armatures are still made; more than 800 of the 1,000 types of agricultural machinery fell to the standardization ax. The average time needed to make a barracks was cut down by half, as 6,000 factories and 97 per cent of the types were eliminated. The function of control covers everything—manpower, machinery, raw materials, prices and costs, shipment. It does not consist in directives but follows the process of fabrication of the individual order from the raw material to the purchaser.

[1] In the following, the word "rationalization" is used in the European sense, including all arrangements of scientific management tending to increase the productivity of labor either in an individual plant or through concentration and specialization in an industry.

4. The most important development, however, is to be found in the closeness of supervision. The government's "economy engineer" may ask for any adjustment of the plant which he deems necessary for a specific purpose. The regional "efficiency committee" may order transference of machinery from one plant to another. Producer cost is a subject of close supervision down to the details of assembly and spare parts. Plants have been grouped in categories of efficiency, and prices have been so fixed that the better part of profits will be a premium on the increase of efficiency during the contract period. There is no secret in any operation or factory organization. Property rights inherent in the possession of patents and processing methods have been overridden along with cartel quotas and marketing agreements.

German industry—so it is asserted by Nazi sources—is administered as though it were one great pool. The individual entrepreneur or manager no longer has the task of producing as much as he can, as in the first stages of the Four Year Plan, but has become the executive agency of a managing board on a higher level. The entrepreneur is directed to produce, and he is sure that the customer who has been assigned to him will pay the price which has been fixed for both. Private initiative, said Director Zangen, president of the Reich Group Industry, has been shifted from the market to the efficiency drive in the factory (*Deutsche Allgemeine Zeitung*, December 16, 1942); but even there, the *Frankfurter Zeitung* (December 18, 1942) added, the original data to which the entrepreneur must adjust himself have changed.

II

One would think that this kind of close public control of business could be

achieved only with a huge bureaucracy and through overwhelming power of the state over the centrifugal forces. The opposite is true, however. There is a huge state bureaucracy to govern labor, agriculture, and the consumers. But the bureaucracy which governs business and industry is of a different kind. Business is governed by an interplay of powers of different origin. The central authorities, which give directives, generally have a comparatively small staff and have to rely on executive and advisory machinery which they do not own, appoint, or pay. As we shall see, this machinery is provided by business itself; and whoever wants to become the focal point of economic planning must first gain control of this machine, which by now is so widespread and ramified that it has developed a routine of its own. The decree which gave Professor Speer precedence over Dr. Funk, Reich minister of economic affairs, had been prepared by the growing importance of the "Central Committees and Pools," agencies of co-operation between the Organization of Self-administration of Business and the Ministry for Armament and Ammunition. It hardly surprised observers who had watched that co-operation grow closer and closer through 1943 and who also had in mind the course which events had taken on other, similar occasions. The pattern of these frequent turnabouts of industrial policy is now established: Whenever closer control becomes necessary, the state bureaucracy is found unqualified to meet the technical difficulties involved, and the machinery of control is intrusted to representatives of the business community, who, in turn, yield some positions in industry or in the control agencies to the Nazis or get more entangled in the Nazi network of hierarchy.

In the three-cornered fight between state bureaucracy, Nazi party, and business community, the two latter have more often been allied than adversaries. The Speer ministry, which is close to both army and party and which has constantly extended its jurisdiction at the expense of the Ministry of Economic Affairs, has close contacts with the business world. Speer has two networks of industrial control under his jurisdiction: on the one hand, the District Armament Offices and the armament inspectors (who are ex officio also war economy inspectors of the army and thus liaison men between the High Command and the Ministry of Armament and Ammunition); on the other hand, the Central Committees and Pools (*Hauptausschüsse und Ringe*), which are boards composed of experts taken from industry. Moreover, in each Gau, an Armament Board (*Rüstungskommission*) is formed; it is composed of the regional armament inspector; the armament commissioner (*Rüstungsobmann*, who is nominated by the Central Committees and Pools of the Gau); the army area deputy (*Wehrkreisbeauftragte*, an efficiency engineer who also is close to the Speer ministry); the presidents of the State Economy Office (the organization of the Reich Ministry of Economic Affairs), the State Manpower Commission, and the Gau Economic Chamber; the Gau power commissioner, who is also controlled by Speer; and the only professional Nazi on this board: the "Gau economic consultant of the N.S.D.A.P." Dr. Funk, nominally still deputy-general of the Reich's economy, thus commands only two votes at best in a body which for all practical purposes decides how the industrial facilities of the Gau shall be employed. In executing the decisions no agency of the Ministry of Economic

Affairs co-operates, but only those under Speer and, in particular, the Central Committees, which are the focal point of co-operation between industry and the procurement offices. With them rests all responsibility for the supply of the army, and their jurisdiction therefore includes distribution of orders, rationalization, shutdowns, and specialization. Managerial executives and technicians are the prevailing element in these Committees and Pools, but the presidents very often are entrepreneurs. In all cases they are very close to the Economic Group or Trade Group of the Organization of Business Self-administration, (O.G.W.), which is under Funk's jurisdiction, but has now been placed under the supervision of Speer (in his capacity as general deputy) with respect to armament production.

III

It is also important that the Armament Board is formed on the level of the Gau, for this center of administration has been the locus of the fiercest fight for power. The Nazis have found it difficult to control the whole of the economy through directions from the highest positions, but equally difficult to place a party member in charge of individual economic activities on a lower level, such as the district. The Gau is the "center level" (*Mittelinstanz*), which allows a moderate amount of decentralized, discretionary power to its administrator but makes him sufficiently dependent on headquarters. The Economic Districts of the Ministry of Economic Affairs and the Defense Districts of the Reich Defense Commission were co-ordinated with the Gau. The Gau Economic Chambers became the executive agencies and often the seat of the most important organizations of economic control, and in turn they have now been subordinated to the Gau Armament Board. All vertical organizations—business, army, government, war economy—are focused in the institutions of the Gau, easily controlled by the *Gauleiter*. Personal contacts and facilities to use state bureaucracy, business self-administration, and other executive agencies made it possible to carry out the policy of the *Gauleitung* with a very small staff. It is easier for a business firm to hire a director who has been recommended by the *Gauleiter* than a man who comes from party headquarters. Likewise it is easier for the *Gauleiter* to obtain co-operation through infiltration than to govern and provoke reluctance by domination. The Nazis, therefore, have not abolished independent institutions but use them.

It is characteristic of the Nazi concept of government that they neither conquered the institutions which they inherited nor relied on their transformation into reliable machines. They were not satisfied with transforming the state into a huge machine of oppression, but they maintained and developed their own party apparatus for that purpose. Nor did they rely on "state capitalism" or any other form of government control over business but set up an independent organizational network, which they influence from without *and* from within. They have no ideological preference for either form of control but shift responsibilities from one organism to the other as expediency requires. The bureaucracy of the government was deprived of many powers of economic control which it had held in the first years of the regime and has been superseded by independent and party machines. It is not surprising, therefore, that on the level of the Gau the Organization of the Self-administration of Business should have gained

power, not only at the expense of the state but also at the expense of Nazi party institutions. For instance, the Gau economic consultant, a representative of the party, cannot become president of the Gau Economic Chamber. In return, business gave places to outstanding Nazis, and the Nazi subleaders now return to the meeting hall of the boards —no longer as representatives of the party against business but as directors of business firms and members of the Self-administration, arguing the point of view of their employers.

> The occupation of leading posts in business by National Socialists will contribute to lessen government intervention, because these men understand better the aim of National Socialism. Many business firms have already opened opportunities to such personalities. . . . . The institution of a commissioner in the factory is deemed undesirable. On the other hand, the appointment of managing directors and vice-chairmen is no longer considered a private unpolitical act. . . . . Repeatedly the Party has put leading officials, in particular, Civil Servants, at the disposal of business [*Frankfurter Zeitung*, September 16, 1942].

IV

If the Nazis go into business, the corporation manager, on the other hand, has seen the dignity of officialdom bestowed upon himself. In the Economic Groups, Reich Associations, Central Committees, and Gau Economic Chambers, he exercises authority with all the power of an official. He issues decrees with legislative power and fixes penalties with executive power. As an executive of the Organization of Business Self-administration, he plans production and allots priorities to himself as well as to his competitor. His position can entitle him to ask for full information on the business secrets of a firm which in private may be his competitor, or even to put that firm out of business by decree. As general deputy or president of one of these self-administrative bodies, he has taken over functions of control, notably with regard to the distribution of orders and raw materials, which had previously been the prerogative of a government agency, the Reich Offices.[2] He even exercises price control on behalf of the government, which has delegated power to the compulsory cartels. Dr. Rentrop, one of the leading individuals in the Office of Price Administration, twice found an opportunity for self-congratulation for having been able to keep the organization of the price commissioner small, thanks to the efficient working of the "self-administration of prices" through cartels, "market syndicates" (*Marktgemeinschaften*), and business associations (meeting of the managing directors of the Economic Chambers, December 11, 1942). Avieny, Gau economic consultant of Frankfurt, said in July:

> Initiative can be more effective in directing business the smaller we allow the directing machinery to remain and the better we succeed in co-ordinating the attitude of leading businessmen with the requirements of National Socialism [*Frankfurter Zeitung*, July 27, 1943].

Indeed, by relaxing the tight grip of government on business, the party has not lost but gained. Their grip on the organization of business has become tighter because they have stored away the application of physical force as a last resort and let business make its own laws—which by the force of prevailing conditions can only be Nazi laws.

A brief survey of the leaders of industry whose attitude meets the requirements of National Socialism shows that

[2] "We should free ourselves from the idea that a person who acts in official capacity and exercises sovereign rights must needs belong to the administration and be subject to the Budget Commission" (*Frankfurter Zeitung*, July 1, 1942).

they are a cross-section of the highest strata of the ruling class: technical directors and other members of the so-called managerial and executive class as well as entrepreneurs of the old type occupy the highest positions in the planning agencies and in the organization of business. Moreover, the process of concentration which has been under way through the last decades is greatly enhanced by the new powers acquired by this entrepreneurial technocracy, and a replica of industrial concentration is found in the concentration of several planning powers in the hands of one man. Dr. Karl Lange, director of an association of industrialists, is managing director of the Economic Group for Machine Building, chairman of the Central Committee for "Machines in War Industry," head of the Control Office of Engineering in charge of foreign trade with the functions of a Reich office (*Reichsstelle*), and general deputy for machine building with the functions of a Reich commissioner in charge of overall planning in the machine-building trade. Similar cumulation of functions can be cited in the case of Röchling, president of the Reich Association for Iron, old-style entrepreneurial king of the Saar mining industry and one of Hitler's first followers; Dr. Wilhelm Zangen, managing director of the Mannesmann works, is president of the Reich Group Industry and head of the Central Committee for Army Supply and General Instruments; Dr. Walter Schieber combines a key position in the organization of industrial self-management with the presidency of the Procurement Office in the Speer ministry.[3] The Reich Armament Council, highest authority of the Speer organization, is composed of five generals, three old-style entrepreneurs, three managers of pre-Nazi standing, and two managers whose position was less prominent before 1933.[4] The chairman of the Economic Group for Electrical Industry—Director Luschen of Siemens and Halske—has been appointed Reich commissioner with the functions of a Reich Office and is also president of a Central Committee and of a Main Pool in the Speer outfit. No wonder that when Speer gave an account of his activities, he stressed the help which industrialists gave him and named a list of his fifteen most valuable aids, beginning with Government Councilor Pleiger, president of the Hermann Göring Works, vice-president of the Reich Association for Iron, and Reich coal czar, and ending with "Saur and Schieber, my closest collaborators who have also come from industry." Saur and Schieber are now heads of two "production departments" in Speer's ministry.

Occasionally, subtle differences appear. Röchling, an old-style entrepreneur, was made iron czar by Göring,

[3] Schieber and his colleague Kehrl, as well as Pietzsch, the president of the Reich Economic Chamber, are engineer-industrialists who pioneered in the field of substitute materials. Schieber organized the *Thüringische Zellwolle*, the first large-scale supplier of cell-wool. Pietzsch was a professional inventor in Munich. Kehrl was a small industrialist who had been elected chairman of a local economic chamber. The career of each of these men was based on their usefulness for the autarchy program, not on their affiliation with the Nazi party.

[4] Röchling, Vögler, Bücher, Poensgen, and Zangen were designated, by their respective key positions in industry, to serve as economic councilors under any German government. Röhnert and Kessler, who were both managing directors of important concerns before 1933, might or might not have acquired supra-entrepreneurial positions without the advent of the Nazis; but Kessler, at least, was an early Nazi, like Röchling. Only in the case of Pleiger, managing director of the Hermann Göring Enterprise, can no basis except loyalty be cited in support of his qualification for a leading post; without the Nazis he would have remained a small businessman.

and he appointed as vice-presidents a number of owner-managers, whereas under him a body of managing directors, appointed by Funk to the Board of the Reich Association for Iron, consists mainly of managerial elements. The decisive feature of the new setup, however, is not the proportion of old- and new-style entrepreneurs but the fact that here government authority has been given to a body of people with common business interests. They publish laws over their own signature or over the signature of the Reich minister of economic affairs and derive their power from the fact that they have been appointed supermanagers in their character and function as representatives of business associations. The *Deutsche Volkswirt*, in one of its frequent giveaways, made it clear that what matters is not the extent of power thus given to a few but the maintenance of the class character of these few:

> The old-style entrepreneur considers his association a mere representation of interests. But with government power bestowed on it the Association grows beyond its members. . . . . The entrepreneur now sees himself faced with his former colleague and competitor who allots him raw material and tells him what to produce and how. . . . . However, it is better to have this done by a man of the trade than by an official [December 25, 1942].

There is no reason to doubt the sincerity of declarations to the effect that the Nazis really want big business to do the job and do not intend to curb the initiative of these organization heads. Rentrop, already quoted, stressed the benefits of such an interplay of private and public organization:

> The longer the National Socialist revolution lasts, the less can the distinction between the forms of private and public law be upheld. The Reich Association is something in between. . . . . It is very important that the Price Administrator has at his disposal an instrument he can co-operate with . . . . they [the Associations] control the whole market . . . . as far as possible he [the Price Administrator] uses cartels [*Frankfurter Zeitung*, February 19, 1943].

V

The Nazis have consummated a development which had been a characteristic trend in German cartel law since the beginning of this century, i.e., the compulsory enactment of cartel decisions and agreements by the government authorities. Though cartels have been abolished, their heads reappear as presidents and chairmen of the Economic Groups, Reich Associations, and Central Committees. Vested owner rights, such as were crystallized in the cartel quotas, are now overridden by the compulsory cartel or the allotment administration; but the men who wield these instruments of economic power are representatives of the most powerful concerns of the industry. The monopolistic entrepreneur adds to his power of freely disposing of the instruments of production by acquiring the power of deciding the utilization of plants in his industry. He becomes his own syndic and trustee as well as the trustee of his colleagues.

The relevant development, again, is not in the pedigree of those who exercise power; they may be either owner-entrepreneurs or manager-entrepreneurs. The new fact is the transition of the entrepreneur to the level of administrative management. A historical parallel is the emergence of territorial seigneurs in the thirteenth century. Capitalizing upon the principle of medieval law that the privilege of sitting in court bestowed the title of nobility, the lords achieved the position of *domini terrae* by acquiring jurisdictional power in various territories under all sorts and degrees of fee. Industrial duchies in contemporary Ger-

many are founded on no other principle than that of jurisdictional power, which transforms an advisory function into an office.

The meaning of this development will appear more clearly once we compare it with the American system. The United States government appoints individuals with business experience to high executive posts in the control agencies, with the provision that for the time of their service in a government agency they may not have any connection with their concern. The former business manager is integrated into a bureaucratic setup and has at his disposal a bureaucratic government machine which is supposed to be free from any business bias. He may take advice from his former colleagues—and pressure groups organize lobbies to urge this advice upon him—but his legal powers are of an entirely administrative nature. The German government, on the contrary, delegates power to an association of entrepreneurs, or to a compulsory cartel, and appoints an active member of the supra-entrepreneurial business bureaucracy to be leader or deputy for the control of his trade. It is obvious that a compulsory organization which shares all responsibilities of execution is far better equipped for consultation than a pressure group outside the government machine. The German industrialists' organizations identify themselves with the Nazi government, whereas many American industrialists consider the government their eternal enemy even when it carries out their own intentions. American economy cannot be called less capitalistic because businessmen complain about state interference. German economy is neither more nor less capitalistic by the fact that German industrialists co-operate in the Nazi organization with different degrees of willingness and that some have profited immensely by it, while the majority are more or less its victims. The victims sometimes regret the old times when they had the American type of government interference. The *Wirtschaftsring*, a paper very close to the old entrepreneurial conservative milieu, complained that the new organization might lead to a dictatorship of the "syndici," whereas "many a Ministerialrat is less bureaucratic in his soul, has more initiative and is more responsible than many an officialized business organizer" (January 15, 1943).

Though Nazis get into business positions, the fact that the Nazi economic policy is shaped by the business community is more important. Though managerial elements climb the social ladder, it is more important that managers and entrepreneurs alike reach the highest power only in the hierarchy of superentrepreneurial organizations. Though planning makes all entrepreneurs dependent on decisions of higher boards, the business community identifies itself with these boards. Though changes are going on in the composition of the ruling class, the trend toward concentration of the power to dispose of the means of production in a few hands has not been altered.

The fact that most of the new officials are appointed by the minister enhances the chances of the managerial element of the *Spitzenverbände* to reach positions which might have been less accessible to them through election by the old owner class. But these executives were a rising class anyhow. A group of students[5] has paid special attention to the

[5] Dr. Franz Neumann, *Behemoth* (New York, 1942); A. R. L. Gurland, Otto Kirchheimer, and Franz Neumann, *The Fate of Small Business in Nazi Germany* (Washington, 1943); A. R. L. Gurland, "Technological Trends under National Socialism" *Studies in Philosophy and Social Sci-*

question of how leadership is acquired in the "command economy." The amazing fact is not that Nazi officials should have penetrated into the inner circle of the business community but that so few have been able to do so, unless they had already been rising stars in the business bureaucracy before 1933. Dr. Neumann says:

> Leadership in the provincial chambers lies chiefly with independent businessmen of substantial means who joined the party before 1933 and who were reserve officers in 1914–18. Their appointment is their reward for faithful party service..... Their previous experience was with chambers of commerce, cartels or the old *Spitzenverbände*.[6]

A strong contingent of such upstarts has entered the ranks of the supra-entrepreneurial hierarchy via managerial positions in the party-owned trusts (*Hermann - Göring - Werke*, *Gustloff - Werke*, etc.), the new financing corporations of the armament and autarchy programs (*Rüstungskontor*, *Generatorkraft*, etc.), or new *Spitzenverbände* or cartels (*AG für Kohlenwertstoffverbände*). It is significant, however, that certain old trends have continued as though no Nazi revolution had happened: following the trend of technological developments, the chemical industry delegates more representatives to the boards than before, while the importance of heavy industry seems to be diminishing; contrary to official Nazi ideology, small business is not represented by any of the new masters; in accordance with the general decline of "finance capital," the Nazi financier, Freiherr von Schroeder, has not acquired a position of political importance, though he is vice-president of many industrial concerns; civil service is still a poor jumping board for ambition, as is evidenced by the decline of two able men, Reinhardt and Landfried, whose signature is under most of the earlier Nazi laws. Their places are taken by men like Hettlage, Hayler, and Kehrl, whose careers are characterized by the above-quoted description. Most frequently, however, we meet men who must be considered as representatives of just those powers which we would expect to be represented—the biggest concerns and associations. The men who hold the highest positions seem to wield power as proxies of their organization. Power accrues to position rather than to merit.

VI

The instrument of this new power policy which amalgamates political and economic functions was, and for a good part continues to be, the planning sector (*Lenkungsbereich*). The creator of this institution was President Kehrl, who is now, in the new setup after the September *Erlass*, head of the production department for raw materials in Speer's ministry and of Speer's Planning Office. He says:

> After total control had been achieved, it became necessary to relax the bureaucratic rigidity. The State had urged upon business uncongenial forms of State economy..... Planning measures had been introduced piecemeal as they were expedient. This patchwork system led to confusion, and orientation became ever more difficult [*Deutsche Volkswirtschaft*, December, 1942].

The government machine required to fill all the various tasks of allotment, supervision, prohibition, and standardization down to the least detail had become so huge and the agencies involved in every process of manufacture so numerous that it finally became apparent that both centralization and decentrali-

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ence, Vol. IX (1942), No. 2. I am indebted to Dr. Gurland for suggestions in preparing this paper.

[6] *Op. cit.*, pp. 389 f.; see also nn. 3 and 4 above.

zation existed in the wrong places. Each factory had to deal with a number of *Reichsstellen*, each responsible for a different raw material, and, in addition, with the army control boards, the price administration, and the organization of its own trade branch. Among these agencies, only the Self-administration of Business had any amount of insight into the factors and processes of production proper. The reform, therefore, was based on the idea that each factory should have to deal only with one agency —if possible, one that was "close to the factory" and able to center control around production. This was the Organization of the Self-administration of Business (O.G.W.). Control was to be exercised not over the source of the raw material but over the process in which it was used. The *Reichsstelle*, therefore, could no longer allot priorities to the factories directly. It became a clearing agency between the different branch organizations of the processing industry. This is the idea of the Planning Sector (*Lenkungsbereich*). Only the branch organization deals directly with the factory, and the different branch organizations surrender wholesale priorities for their respective products to each other. Utilization of the material, processing methods, standardization, and whatever there is to be directed in a planning sector were placed under the discerning power of its director or president.[7]

"The head of such a trade sector," says Kehrl, "was to be given jurisdiction over all functions of planning, control of imports and exports, direction of production" (*Deutsche Volkswirtschaft*, December, 1942). Historically, such plenipotentiaries were the directors of the *Reichsstelle* in some trades, the presidents or directors of the Economic Group in others. The outcome of developments, however, was that some agency of the Self-administration of Business had to furnish the personnel and the organization of the deputy leader, who, in general, has no staff of his own. The most characteristic form of this tie-up of a semiprivate business organization and the official function of the planning sector is the National Association (*Reichsvereinigung*), a compulsory peak cartel covering a whole industry. The first organizations of this kind appeared in the heavy industries: in 1941 one was created in the field of coal mining; in 1942 another in the iron industry followed. The functions under the jurisdiction of this body are the following: planning the distribution and allocation of raw material to producers (priorities to consumers remaining under the jurisdiction of the *Reichsstelle*); planning the marketing of ores; planning the program of production; import and export of iron and rolling-mill products; shifting of orders to foreign countries; control over all marketing organizations in the iron trade, including power to dissolve or to reorganize them; promoting technical improvements; regulation of prices; arbitration; statistical services and market supervision; revision of existing marketing agreements; rationalization, including power to shut down.

Later, the allocation of orders was added to these functions. All powers extend to alloys, scrap, and iron-containing materials. Membership in the *Reichsvereinigung* is compulsory for all firms producing or marketing such products. Violations of orders of the president are punished. The district deputies of

[7] Similar causes forced similar decisions on the O.P.A. in this country, when it implemented preference ratings with branch allocations and flat-preference ratings.

the Main Pool for Iron Production are directors of the regional offices of the association, which in most cases are identical with those of the Economic Group. Organizations of this type exist now in many trades, sometimes under the name of *Gemeinschaft*, sometimes in the form of an old syndicate, of a *Dachkartell*, or of a compulsory cartel. The most important are: *Chemische Fasern* (artificial fibers); *Bastfasern* (husk fibers); *Textilveredelung* (textile processing); *Deutscher Zementverband* (cement cartel); *Deutscher Salzverband* (salt cartel); *Glastreuhand* (glassware syndicate); *Gemeinschaft Pappe und Packpapier* (paper board and wrapping paper); *Gemeinschaft Schuhe* (compulsory cartel of the shoe industry). This last organization has the most far-reaching powers yet bestowed on a private cartel; not only has it complete jurisdiction over the members of the trade, but, as rationing authority, it has assumed a state prerogative with regard to third persons—its customers.

VII

This type of a national association was only the first experiment in organizing the vertical self-administration of a trade. Later it was found more expedient to create larger planning sectors. Today only three planning sectors are identical with a *Reichsvereinigung:* those for coal, iron production, and shoes. In these industries, which are fairly homogeneous with regard to raw material and processing, the Reich Association was able to take over all functions of the government office (*Reichsstelle*).

The planning sectors for coal and iron are vertical organizations, comprising all phases of production. Similar conditions prevail in the sectors for chemistry, liquid fuels, industrial fats, potash and salt, rubber, and paper.

In some fields of production one planning sector was not sufficient. If a raw material is used by several industries, its planning sector was separated and a planning sector of the finished product was organized as a "secondary" sector. This applies to the following sectors: clay and stone, and glass and ceramics; timber and wooden goods; leather and shoes; textiles and clothing. Two sectors so organized are called *Stufen* ("phases").

In the iron industry there are even three phases—those for iron production; for iron and metals; and a number of third-phase sectors responsible for finished goods, such as engineering, electrotechnics, precision tools, and optical instruments. In this last category of industries the Planning Sector is managed by the Economic Group, whose chairmen have been nominated plenipotentiaries with the functions of a Reich deputy (*Reichsbeauftragter*, the director of a *Reichsstelle*). The same is true of the Planning Sector for Chemistry, which is under the management of Director Schlosser, chairman of the Degussa Company and of the Economic Group for Chemistry.

In the other industries the Planning Sector is directed by the Reich deputy in his capacity as director of the *Reichsstelle*, which controls foreign trade in raw materials as well as priorities. In general, he limits his activities to supervising and delegates most of his powers to the Economic Group or Trade Group.

Even the Economic Group is not equipped to handle all planning problems, and even the Reich Association is too far away from actual production. Both organizations, therefore, have delegated their powers to cartels and specialty groups (*Fachgruppen*). Thus, in the field of iron production the organizations responsible for planning and control are,

in fact and by law, the Pig-Iron Cartel, the Ferro-Manganese Association, the Trade Section for Light-Steel Processing, and the Specialty Group for High-Grade Steel. The Wire Association holds directing powers in all business concerning wire products.

Likewise, the private cartel for blown and molded glass (*Hohlglasgemeinschaft*) has been assigned the following duties: regulation of prices and terms for markets at home and abroad; standardization and production program; direction and centralization of sales; agreements with manufacturers abroad on processing; efficiency drive; pooling of trademarks and patents; arbitration; and "taking over the tasks hitherto carried out by government agencies or organizations of Self-Administration," which can refer only to allocations. These instances, taken at random, show that control of all economic activities tends to be concentrated in the hands of that organization which is "closest to the factory." Allotment of raw materials is becoming a function of the control of production, not the other way round. The technical requirements of control at the place of production give industrialists the power to supersede the control agencies of the government. According to Kehrl:

> A production plan cannot be made up at office desks. The Economic Groups must do it. The Reich Deputy must tally it with the requirements of economy as a whole and leave execution to the business groups. . . . .
>
> Similar to the Reich Minister of Economic Affairs who undertakes only the supervising tasks of over-all planning and co-ordination of the various trade fields, the director of a Planning Sector shall fulfill these functions in his trade, but delegate execution in detail to the organizations of self-administration since only then will the *Reichsstelle* have an elastic instrument which can easily be surveyed.

There are interesting exceptions to this rule, however: the *Reichsstelle für technische Erzeugnisse*, which handles the supply of metalware for civilian use (*Kriegsauflagenprogramm*), has powers of control which were delegated to it from the business organization. But the civil service man who had been at the head of the *Reichsstelle* was called back into the Ministry of Economic Affairs and his place in the *Reichsstelle* was taken by the managing director of the *Alexanderwerke-Remscheid*. He at once delegated his powers to the three trade-groups concerned in the production of hardware. The *Frankfurter Zeitung* rightly remarked that "conditions here are not very different from those in other trades" (September 6, 1942). The reasons given by the *Frankfurter Zeitung* (January 31, 1943) for the greater powers of the *Reichsstelle* in this trade are revealing: production is scattered over 10,000 enterprises of small and medium size and 140,000 handicraft shops; production also includes repair work; the customers are millions of final consumers. The *Reichsstelle* therefore determines what shall be produced and the wholesale priority quota, while execution of the program lies in the hands of the Economic Groups (as *Bewirtschaftungsstellen*), which, in turn, leave the details of planning to cartels, pools, committees, and specialty groups.

VIII

Special conditions prevail in certain planning sectors which are essentially suppliers of a government agency or a branch of the armed forces, the Nazi party organizations, etc. Such organizations are allotted *Globalkontingente*[8] ac-

[8] The *Globalkontingent*, or "wholesale allotment," corresponds roughly to the flat-preference rating which in this country the claimant agencies are

cording to their needs and distribute raw material from this wholesale quota to their contractors. Dr. Goebbels, too, disposes of such a general quota for newsprint, which is allocated through the *Reichspressestelle* by its leader, Max Amann, publisher of the Nazi press. (He shut the *Frankfurter Zeitung* down.)

We have already mentioned the second great exception to the rule, the *Hauptausschüsse und Ringe* (Central Committees and Pools) of the Speer organization. Everything that is connected with armament production is under their jurisdiction, hence withdrawn from the jurisdiction of the Ministry of Economy. The *Reichsstelle* must comply with their decisions. As has been pointed out above, their influence is great on the level of the Gau, with respect to the shaping of policy as well as its execution. The change of their function from an advisory board on rationalization to the decisive clearing agency between the ever growing demands of the war and the declining possibilities of supply, shows that the law always follows the real distribution of power. As soon as it was no longer a question of philosophy but of how things can best be done, the governmental machinery was superseded by bodies which are "close to the factory." At present these boards tend to become more important than the larger Planning Sector.

A *Hauptausschuss* is a board of engineers and managers concerned with the production and processing of one finished product and the parts and materials entering in that process. A *Ring* is a similar board concerned with the production of one product which enters into the production of several other products. A Central Committee is divided into *Sonderausschüsse* and *Arbeitsausschüsse*, according to the elements of the product, and *Hauptringe* into *Sonderringe*, according to processing industries. Most of these boards and subboards are presided over by the big chieftains of German industry; but the engineers and experts who are simple members and do the technical work involved in their operation are probably those singled out to join the hierarchy of managerial and entrepreneurial trustees of Germany's industrial potential. The concentration *Erlass* gave the *Hauptausschüsse* the legal status of a *Befehlsstelle* (government authority) long after they had ceased to be mere advisory boards in practice.

IX

There is one branch in which this dictatorship of the industrial manager is especially marked—the machine-building industry. The higher staff of economic planning in the Central Committees of this trade has discretionary power over all German investment. Director Lange is responsible for production and priorities as plenipotentiary; for rationalization as head of the Central Committee for Machines; for exports as head of the *Prüfungsstelle;* for import of machines and allotment of foreign exchange as general plenipotentiary with the functions of a Reich deputy (head of the *Reichsstelle*); even in this latter function he is no longer dependent on the Reich Ministry of Economic Affairs alone, since the September *Erlass* gave Speer a right to veto all measures affecting this trade. It is not sufficient for a factory to have secured a priority for a machine

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allotted under the Controlled Materials Plan. In view of the basic differences between the German and the American system of raw-material allocation, no attempt has been made in the following to render German technical terms by American terms. I use here "allotment" and "priority" as generic rather than specific terms.

from the *Bedarfprüfungsstelle* (under Funk); in addition, the *Zulassungsstelle* of the Specialty Group of the Machine-building Industry must agree that manufacturing this machine would not interfere with other assignments handed to it by the Central Committee. The raw material is allotted along with the license (*Zulassungsschein*) of this organization. Before this procedure was adopted, production was controlled by the so-called *Meldeschein*, or "application," which made it possible for an agency or organization or factory to have its orders filled as soon as it was able to lay hands on a priority for iron. In the ensuing struggle for priorities, red tape and power politics got the upper hand while things did not get done. Even the most important repair work, whether large or small, could not be done before the customer had cleared his way through the procedure of the "Iron Check"[9] in two *Reichsstellen*. Now the Specialty Group allots the raw material along with its agreement to fill the order; and the factory gets all raw materials *uno actu* out of the wholesale allotment (*Globalkontingent*) of the organization.

The German machine-building trade, with five thousand factories employing close to one million people, is pooled as though it were one firm under a unified management. The plenipotentiary can order machines transferred from one plant to another, can order an exchange of patents, distribute orders among the factories, enforce price legislation and fix standard prices, allot manpower, and direct investment. In most cases, however, he will act according to the opinion of the *Hauptausschuss*.

[9] An allotment which is transferred from the claimant of the finished product to the suppliers of parts and raw materials. All these terms are different names for "priority" according to different procedures for obtaining it.

X

At the time of the "concentration *Erlass*," a schematic survey of the economic organization could be represented on the following lines:

I. Types of Planning Sectors
   A. Planning Sectors under direct management of a *Reichsvereinigung*, or cartel
      1. *Reichsvereinigung* for coal
      2. *Reichsvereinigung* for iron production
      3. *Gemeinschaft* for shoes (two phases: leather and shoes)
      4. *Reichsbeauftragter für Kali und Salze* (cartels)
   B. Planning Sectors under direct management of the Economic Group, acting as *Reichsstelle*
      1. Machine-building
      2. Electrical equipment
      3. Precision tools and optical instruments
      4. Chemistry (using Specialty Groups and cartels)
   C. Planning Sectors under over-all management of a *Reichsstelle*, which has given powers of a *Bewirtschaftungsstelle* to an Economic Group or cartel
      1. Metals and foundry products
      2. Ironware for civilian supplies (using three Economic Groups and *Auftragslenkungsstellen*)
      3. Paper and graphic industries (using cartels and the Economic Group for Printing)
   D. Planning Sectors in which the *Reichsstelle* uses another *Reichsstelle* or mixed organizations, or supplies wholesale priorities (quotas) to corporate organizations or government agencies
      1. Packing materials
      2. Leather
      3. Clay and stone
      4. Precious metals
      5. Textiles (using Economic and Specialty Groups and the *Reichsvereinigung* for husk fibers as well as the secondary Sector for Clothing)
      6. Timber
   E. Planning Sectors directly managed by the *Reichsstelle*
      1. Rubber
      2. Abrasives and industrial greases

F. Planning Sectors managed by the *Reichsstelle* conjointly with other government agencies, such as the State Economic Office and rationing boards
   1. Clothing (Army, S.S., S.A., Hitler Youth, the *Reich Sport* leader, etc., have *Globalkontingente*)
   2. Glass and ceramics, hardware and wooden utensils

G. Planning Sectors managed conjointly with the Ministry for Ammunition and Armament
   1. Wood construction
   2. Building (using regional distributing agencies of the Speer ministry)
   3. Fuel (using cartels)

II. Allotment and priority administration
   A. *Reichsstelle*, under a *Reichsbeauftragter* responsible for over-all planning and distribution of raw materials, in particular import and clearing between Planning Sectors.
   B. *Lenkungsbereich*, under a *Bevollmächtigter* responsible for distribution of orders and raw materials, for the administration of *Globalkontingente* (wholesale quotas), and for the fulfilment of the production program through rationalization, standardization, price control, efficiency control.
   C. *Bewirtschaftungsbereich*, responsible for execution of program and distribution in the Specialty Group, mostly identical with a cartel or a Specialty Group of one branch of industry. In this capacity the cartel or Specialty Group is called *Lenkungsstelle*, *Auftragslenkungsstelle*, *Bewirtschaftungsstelle*, or *Verteilungsstelle* and is responsible for regulation of production in detail, marketing, distribution of orders, and preparation of plans.

III. Organization of the Speer ministry after the decrees of September, 1943
   A. Speer's titles: Minister for Armament and War Production; Deputy General for Armament and War Production; Inspector for Water and Power Economy; Inspector of the German highways; and commander of the *Organisation Todt* (pioneers); member of the Central Planning Office under Göring.
   B. Contact organizations with the army in the ministry.
      1. *Rüstungsamt*, headed by General Thomas, who is also head of the *Wehrwirtschaftsamt* of the army, with regional *Rüstungsinspektoren*, who are identical with the *Wehrwirtschaftsinspektoren* of the army.
      2. Corporations under public law (*Rüstungskontor*, *Generatorkraft*, *Heeresrüstungskredit* AG, etc.), which are advance financing agencies for ordnance and carry the *Globalkontingente* of the armed forces.
   C. Command offices of central planning: six production departments. Within the Speer outfit their function is to coordinate tasks involving several industries. Two of them, however, encroach upon offices of the Ministry for Economic Affairs. They are the Office for Raw Materials, which supersedes the *Reichsstellen*, and the Office for Consumption Goods, which overlaps the domain explicitly left to the jurisdiction of Funk.
   D. Contact with industry: the production departments; the Central Committees and Pools; several departments of the *Rüstungsamt;* direct control of the *Reichsvereinigung* for coal and control of the regional offices of the *Reichsvereinigung* for iron, which thereby are withdrawn from the Ministry of Economic Affairs; and the various institutions on the level of the Gau. Special liaison between Production Departments, Economic Groups, and Central Committees.
   E. Contact with the regional agencies of control: the Central Committees; the *Rüstungskommission;* the *Gauwirtschaftskammer;* and the special deputies for armament, power, transport, and labor supply. It is also of great importance that the *Landeswirtschaftsamt* (Funk) and the *Landesbauernschaft* (under the deputy for agriculture) are now subordinated to the Gau agencies of the Speer ministry. This ought to give prominence to the technocratic branch of the administration over the bureaucratic agencies.
   F. Contacts with the agencies under Funk's jurisdiction.
      1. The *Reichsstellen* are overlapped by Kehrl's double function in the Cen-

tral Planning Office and in the Production Department for Raw Materials, and Seebauer's double function in the Production Department for Consumers' Goods and as special deputy for power.

2. Hettlage, the new liaison man between the two ministries, is Speer's subordinate as chairman of the *Rüstungskontor*.
3. Speer has direct jurisdiction over the *Reichsvereinigung* for coal and over the regional agencies of the *Reichsvereinigung* for iron.
4. The Gau Economic Chamber is now subordinated to the Gau Armament Board, and the same applies to the *Landeswirtschaftsamt*.
5. In the Self-administration of Business (O.G.W.) the Specialty Group is now subordinated to the *Hauptausschüsse*, while Funk retains jurisdiction only over the Economic Group.

G. Contact with Sauckel and the Gauleiters.

The new *Arbeitseinsatzingenieure* supersede the *Gauarbeitseinsatzkommissare*.

XI

It is seen that the Speer ministry has three tendencies: it develops into the ministry of ministries; it is the ministry of production; and it has more co-operative contact with business than any other. Moreover, since the time of the reorganization, the *Lenkungsbereich* has lost ground to the *Bewirtschaftungsbereich*;[10] the *Reichsstelle* tends to be superseded by the technocratic bodies of the Speer ministry (the six production departments, with Kehrl in charge of overall planning of raw-material allocation); the *Wirtschaftsamt* is encroached upon by the *Mittelinstanz* of the Speer outfit, in which the Central Committees and armament inspectors are strongest; and in the Self-administration of Business, the Specialty Group, which has been placed under the jurisdiction of the Central Committee, becomes independent of the Economic Group, its superior in the old Funk administration. Only a few industries continue to produce exclusively for the ultimate consumer who has secured a priority from the *Landeswirtschaftsamt* or a raw material check from the *Reichsstelle*. In most industries the system of "cemented allocation" (*zementierte Verteilung*) prevails, i.e., the *Bewirtschaftungsstelle* gives the permit to purchase to the buyer and the permit to deliver to the producer only with specific instructions concerning the material, the production, the processing, the use to be made of the product, and the purpose of the ultimate customer. The instruments of this control are so complicated that a simple listing of the various types of priority used in various industries would exceed the scope of this paper.

It should not be surprising, therefore, if in spite of all attempts at centralized planning the agencies "closest to the factory" had again assumed the technical and executive control of superentrepreneurial management.[11] The organiza-

[10] Excepting the Reich Associations for Coal and Iron, which have wisely placed themselves under the jurisdiction of Speer.

[11] When this paper was written, the German press had discussed this possibility; since then no new material has become available to me.

On June 4 of the present year the Stockholm *Aftenlidningen* carried a report saying that German industrialists had petitioned for the removal of Speer, pointing out that in the interest of the war effort they had requested the appointment of an industrial expert to head the German war industry, while Speer was said to be unacquainted with the enormous difficulties they were facing and to be creating chaos through mass production of regulations.

In the middle of June the political and social implications of this move came out when Hitler, Goebbels, and Speer, speaking before meetings of industrialists, frankly admitted that German industry had been out-produced by the Allies but insisted that German fighting spirit and quality production would catch up. Speer used the occasion to condemn once

tion best equipped, both by the function assigned to it and by the place which it has been given in the setup of the Ministry for Armament, is the Central Committee. We have had frequent occasion to point out its growing importance as an instrument of co-operation between the central planning agencies and business. Its members are technical experts of management rather than businessmen, while the Economic Group, whose place it tends to take, inclines more toward the entrepreneurial point of view. This shift, therefore, expresses a progression toward total war economy; it is a consequence of the increasing amount, scope, and closeness of planning. It is also a sign of the increasing strain on the whole system. It indicates that further attempts at centralized control will be made. They are bound to fail—as the basic mistake of the Nazis is not in their approach to organization but in their view of economy as a whole.

To sum up: Technical difficulties of planning and supervising enhanced the trend toward strengthening the position of those who were in actual command of the industrial resources. The pure government agencies tend to become inefficient as more and closer supervision is required. The agencies that are "close to the factory" tend to acquire powers which originally were a prerogative of the state. Control of the distribution of raw materials becomes a function of the control of production. The hierarchy of industrial self-government supersedes the hierarchy of state and party, whose instrument it pretends to be. In acquiring a status similar to that of the civil service, this industrial hierarchy concentrates economic power and gains control over the whole of German economy. Their organizations, which had originally been charged with executing the program of production laid down by genuine state authorities, tend to assume the functions of shaping policy.

A reversal of this trend would be an eleventh-hour decision, a measure of desperation. Such reversal would indicate that rift between the Nazis and industry which has erroneously been assumed to exist at an earlier date. It would indicate the disruption of the national solidarity and the approaching end of the war.

NEW YORK CITY

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more the survivals of capitalistic organization and announced new measures of concentrated control in the war industries.

This seems to have created that rift which in the concluding section of this article has been called the beginning of the end of naziism. After the alleged attempt at Hitler's life, the Stockholm *Tidningen*, which is said to have excellent relations with German conservative circles, related that many leaders of industry had been arrested temporarily and were accused of being involved in a peace plot designed to save German industry. Goebbels is now in charge of total mobilization. Under him, Speer supervises the war industries, with the help of a "special commissioner of the Führer for tasks of decisive importance," Johannes Geilenberg, a ruthless Nazi. In the plant, special authority, including supervision of the "plant leader" or manager and owner, has been vested in the *Betriebsobmann*, the delegate of the Nazi factory cell.

RECENT EVENTS IN NEGRO UNION RELATIONSHIPS[1]

ROBERT C. WEAVER

BACKGROUND

THE current war and its manpower requirements have forced government to face the problem of securing full use of all available labor. One of the most difficult issues incident to this objective has been the employment of Negroes on contracts where there are closed-shop and other bargaining agreements with labor unions which have excluded Negroes from membership or otherwise limited their work opportunities. In its immediate incidence this problem does not necessarily involve the matter of Negro membership—the traditional hurdle facing colored workers in shops under the control of certain unions. It becomes clear, however, that, when clearance or auxiliary-union affiliation is arranged, the questions of membership status and full participation in unions are sure to become issues. These questions may be raised by the minority affected in its opposition to second-class membership and work permits (sometimes at first-class membership fees),[2] or they may be initiated by white members who cannot see why a group of new workers should have union clearance at no cost or at reduced rates.

In order to appreciate the nature of current trends in Negro union relationships, it is necessary to sketch briefly the background of the problem. The color line in certain American labor unions is deeply intrenched. As early as 1834 the New Orleans Typographical Society forbade its members to work with free journeymen of color,[3] and some international unions (principally in the metal trades and railroads) have denied admission to Negroes practically from their inception.[4]

The National Labor Union was the first national federation of labor unions to deal with the race problem. At its initial session in 1866 it stated that the interests of labor demanded the inclusion of all workers without regard to race or nationality and that organization should be encouraged among colored people. Action, however, was postponed until the next session. At that meeting a committee on Negro labor reported that it was inexpedient to act on the matter. This recommendation was accepted,[5] and the tradition of making liberal declarations and taking no action on Negro

[1] This paper does not include the railroad industry, since it has been subject to the review of the President's Committee on Fair Employment Practice. A full account of the Negro as a railroad worker and his problems with the railroad brotherhoods is available in the *Transcript of Railroad Hearings of the President's Committee on Fair Employment Practice, Washington, September, 1943.*

[2] In a period of full employment and national programs to encourage men and women to enter defense industries, it is inevitable that there should be deep resentment against the payment of work-permit fees to organizations which will not extend full membership to the group affected. In the case of the Negro worker, his opposition to special unions or to second-class union status is but a part of his effort to achieve full American citizenship rights.

[3] French E. Wolfe, *Admission to American Trade Unions* (Baltimore, 1912), pp. 118–19.

[4] Included in this group are the Locomotive Engineers, Locomotive Firemen, Window Glass Workers, Switchmen, Wire Weavers, Maintenance of Way Employees, Railroad Trainmen, Railroad Carmen, Railroad Clerks, Railroad Telegraphers, Commercial Telegraphers, Boilermakers and Iron Shipbuilders, and Machinists (*ibid.*, p. 119).

[5] *Ibid.*, p. 113.

participation in labor unions was born. The 1869 convention admitted Negro delegates and disclaimed race discrimination by resolution. This, too, established a precedent, for, as Wolfe has noted, "This declaration or resolution by a federation of unions was little more than a benevolent utterance with only moral force at its back; it might be easily disregarded or nullified by either a national or local union disinclined to favor organization among Negroes."[6]

Northrup has presented the official attitude and actual practices of the American Federation of Labor and its affiliates relative to Negro workers. The federation soon relaxed its early liberal policies and emphatic opposition to affiliates which excluded Negroes from membership by constitutional provisions and accepted a compromise which provided for the organization of Negroes into separate locals or their direct affiliation with federal unions in instances where they were refused admission to regular unions because of color.[7]

Until there were large government-financed programs of construction and war production, the principal issue raised by Negroes in the A. F. of L. was the *right* to membership—a question which constantly arose at the federation's annual conventions. When large-scale construction projects were initiated by P.W.A., Negro building-trades craftsmen faced a new problem. Where there were separate Negro locals,[8] colored men were usually denied clearance or referral to the publicly financed projects. In other crafts, white unionists objected to the employment of Negroes, opposed their affiliation with the union, or discriminated against them within the organization.[9] Government and labor cooperated in devising procedures to meet the situation. In some instances numerical increases in Negro union membership resulted; in others work permits and union clearance were arranged.[10] In every instance the key to corrective action lay in the policies, practices, and controls established by the internationals and effected on the local levels.

While these developments were creating a more realistic attitude on the part of Negro building-trades craftsmen toward their unions, a new unionism arose among industrial workers. It departed from the dominant craft structure of the A. F. of L. and organized workers on an industrial basis. Following the practices of the Knights of Labor and the United Mine Workers of America when they embarked on mass organizational campaigns, it afforded the Negro a chance for widespread participation. Negro workers embraced this opportunity in many areas and in large numbers.

TYPES OF RACE DISCRIMINATION IN LABOR UNIONS

At the outset the position and responsibility of unions in the matter of Negro employment and upgrading should be outlined. It is clear that a union is directly involved wherever closed-shop, union-

[6] *Ibid.*, p. 114.

[7] Herbert R. Northrup, "Organized Labor and Negro Workers," *Journal of Political Economy*, LI (1943), 211–12.

[8] For a description of the disadvantages to Negroes of separate locals, see *ibid.*, pp. 209–10. Contrary, however, to the inference made by Northrup, the Carpenters do not usually have separate Negro locals outside the South and border states and the Painters have some mixed locals.

[9] For a more detailed analysis of the status of Negro workers in building-trades unions see my article, "Racial Employment Trends in National Defense," *Phylon*, II (1941), 344–47.

[10] For a description of this development see my article, "An Experiment in Negro Labor," *Opportunity*, XIV (1936), 295–98.

shop, or any other type of bargaining agreement between management and a labor organization exists. The American Management Association has stated that, as the first tactic in counteracting union resistance to the employment or upgrading of Negroes, management must emphatically indicate that it regards its policy of nondiscrimination as fixed.[11] Once management announces its favorable policy toward accepting colored workers, the attitude, policies, and actions of the union are extremely important. It is, of course, always possible for unions to take the initiative, as some of them have done. When a labor organization, acting in good faith, declares that it is in favor of full integration of Negro workers, discriminatory hiring policies cannot then be ascribed to union opposition. This is the one sure way for the union to establish its position clearly.

In the past, labor unions have impeded the employment of Negroes in the following ways: (1) withholding membership from Negroes (*a*) by means of constitutional provisions, (*b*) by means of a provision of the ritual, or (*c*) as an unwritten policy of the international or the local union; (2) accepting Negro members but discriminating against them in referrals;[12] (3) hindering the upgrading of Negroes; (4) championing the upgrading and employment of Negroes in plants in which the union has no bargaining agreements, while taking no action to correct discrimination in plants in which the union has an agreement.[13]

Contrary to popular opinion, relatively few important unions outside the railroad industry have constitutional provisions barring Negroes from membership. The establishment of racial restrictions in rituals and the creation of Negro auxiliary unions are much more important factors in manufacturing industries. This follows because the International Association of Machinists has a ritual provision barring Negroes and the Brotherhood of Boilermakers, Iron Shipbuilders, Welders, and Helpers, which reports a similar bar against Negro membership, provides for their organization in auxiliaries under the control of white locals. The influence of these two metal-trades unions has grown, since they no longer restrict their jurisdiction to craftsmen and have often limited Negro employment not only in skilled but also in semiskilled production work. Their current strength in shipbuilding and aircraft (where they are, in effect, industrial unions) gives them control over segments of the two largest defense industries. The exclusion of Negro workers, until late in 1942, at the Boeing Aircraft Company in Seattle, was due largely to the policy of the Machinists' union; and the continuing difficulties at the Kaiser Shipyards in California and Oregon have been occasioned by the local Boilermakers, who stood first for occupational limitation and finally for the relegation of Negroes to auxiliary locals.

Negro auxiliary unions take varied forms in practice. A few are said to operate as separate locals with complete autonomy and direct lines to internationals. Such a situation is contrary to the terms under which they are established and rarely exists. Usually, Negroes in auxiliary locals do not control their own affairs, nor do they have effective means of influencing the general policy of

[11] American Management Association, *The Negro Worker* (New York, 1942), p. 15.

[12] Northrup has presented a detailed analysis of the types of color exclusions and the organizations guilty of them (*op. cit.*, pp. 206–11).

[13] This occurred in Mobile, Alabama, recently when the C.I.O. and A.F. of L. were competing for bargaining rights at the Alabama Shipbuilding and Drydock Company.

the parent organization.[14] Certainly, Negroes attached to such locals do not have first-class union membership. Often the auxiliaries are used as a means of limiting the number of colored workers, and in every instance they can be instrumental in depriving Negro workers of seniority rights. Negro auxiliary members complain that they do not benefit from grievance protection through the aggressive action of the supervising locals. (In the railroad industry, where auxiliaries have a long history, this is a long-standing complaint.) In the case of the numerically important Brotherhood of Boilermakers, Iron Shipbuilding, Welders, and Helpers, the second-class status of Negro workers in auxiliary unions is becoming increasingly controversial.[15]

The manpower requirements of war production and government's action to ban discrimination on defense contracts have altered the responsibility of the A. F. of L. for policies and practices of its affiliated internationals.[16] The position of the federation in demanding from government certain recognition and rights for all A. F. of L. unions implies a responsibility for securing compliance with federal policy. A part of this policy is the executive order which bans discrimination in war production. The recent action of President William Green in securing a work permit and clearance for a Negro machinist on the West Coast and the action of the Metal Trades Council in influencing the policies of the Boilermakers in Portland, Oregon, indicate gradual acceptance of this responsibility by the A. F. of L.[17]

The Congress of Industrial Organizations, because of its structure, its mass-organization program, and the large participation of Negroes in it, has from its inception done a more effective job than the A. F. of L. in facilitating the employment of Negroes. But this is a relative statement. In many instances C.I.O. unions have been slow to act. Opposition to the acceptance of Negro workers on the part of C.I.O. unions has found its most striking expression in the work stoppages occasioned by the introduction of Negro workers into plants and occupations where they were formerly not used. National officers of the C.I.O. have issued unequivocal statements on this matter, many of the international unions have specific constitutional provisions banning race discrimination, and an increasing number

[14] On many occasions A.F. of L. officials have defended Negro auxiliaries (cf. Northrup, *op. cit.*, p. 208).

[15] "Warning their auxiliary lodges against 'outside agitation' the International Brotherhood of Boilermakers AFL, refused to consider a petition asking for integration or local autonomy submitted by Auxiliary 26.

"In a letter to their auxiliaries, the Executive Council of the Brotherhood stated that they were without authority to 'grant full and complete integration to the members of the auxiliary lodges (segregated units) into the regular or supervising lodges under the International Convention action'" (*Pittsburgh Courier*, September 25, 1943); cf. also Northrup, *op. cit.*, p. 207, n. 7.

[16] The pre–World War II situation in the A.F. of L. was summarized in a bulletin issued by the United States Department of Labor. "The race issue has presented difficult problems and has created serious situations from the beginning of the organized labor movement. The American Federation of Labor has since its inception declared for the organization of all workers without regard to 'race, creed, color, or sex.' At the same time some of the most important and powerful organizations affiliated with the federation specify that applicants shall be white, others exclude orientals; still others admit Negroes but not on an equal footing or on the same terms as white workers. The American Federation of Labor has no control over the internal policies of its affiliated international organization, hence cannot apply to them its own rules in this matter even though it admits the elements of inconsistency in the situation" (*Handbook of American Trade-Unions, 1936 Edition* [Washington, 1936], pp. 37–38).

[17] See below, pp. 241–42.

of internationals have established machinery for enforcing their announced policies. The stronger central authority in the C.I.O., the absence of constitutional or ritual bars to Negro membership, and the recent appointment of able Negroes to the executive board are facilitating the transmission of statements of policy down to the local levels. To implement its policies and facilitate their enforcement, the C.I.O. has recently established a National Committee To Abolish Racial Discrimination. This committee has a full-time, competent director and is in the process of establishing similar antidiscrimination committees in each local, county, and state industrial-union council.

C.I.O. ACTION TO COMBAT RACE DISCRIMINATION

The intrenched nature of the color line in certain segments of the labor movement makes it difficult to get at in an old and conservative organization such as the A. F. of L. On the other hand, the early blanket indorsement of all C.I.O. unions by certain elements among Negroes often led to an uncritical attitude toward them. This, in turn, occasioned a policy of paying lip service to nondiscrimination in certain unions. At times these activities developed into tactics of evasion. During the current war, the pressure of public opinion and economic necessity are forcing many unions to deal with the matter of Negro employment and upgrading. In some instances the approach has been spontaneous and forthright; in other cases, it has been forced, hesitant, and halfhearted.

Local No. 1225 of the United Electrical, Radio, and Machine Workers of America, C.I.O., in New York City, established a Fair Employment Practice Committee and set up the following procedure: (*a*) Questionnaires on the status of minority-group employment were sent to all shops; (*b*) the local referred Negroes, Jews, and persons of foreign extraction to all shops; (*c*) if these persons were refused employment, the business agent investigated and reported to the committee; (*d*) if management continued to discriminate, a meeting of the shop committee and the union's Fair Employment Practice Committee was called to pass a resolution against discrimination; (*e*) after the resolution had been passed, the local sent a qualified worker of the race, color, or creed discriminated against to the plant in question; (*f*) if this worker was refused employment, the case was sent to the President's Committee on Fair Employment Practice. Other New York City locals followed this lead.[18] Results were soon forthcoming. In May, 1942, there were only 172 Negroes in forty-one selected electrical-machinery plants in the city. By January, 1943, the number was over a thousand. In May, nonwhite workers constituted but 1 per cent of those employed; eight months later they made up 3.7 per cent of the total. For the nation as a whole the proportion of nonwhites in electrical machinery increased, during the same period, from 1 to only 1.5 per cent.

The upgrading of Negro workers from janitorial to production jobs at the North American Aviation plant in California had been the occasion of many conferences; and management stated that it hesitated to take the step because of the possibly unfavorable reaction of the white workers. In order to supply the final impetus for action, a conference

[18] For a discussion of U.E.R.M.W.A. in Philadelphia and on the national level see below, pp. 240 f., 248.

was arranged with Aircraft Division of Local 887 of the U.A.W.–C.I.O., which had a bargaining agreement with the plant. In February, 1942, the Executive Committee of this union addressed a letter to the company, requesting management to give colored persons in the plant equal consideration for production work and to publicize the above policy so that future Negro applicants would be fully informed. By the fall of 1943 the California North American plant hired about two-thousand Negroes—the majority of whom were women on production.

The most widely known and in many ways the most difficult problem involving Negro union relationships in the C.I.O. arose in the conversion of the automobile industry in Michigan from civilian to defense production. At the time the conversion program was undertaken, Negro workers were generally restricted to foundry and unskilled work—types of employment in which there were to be drastic reductions. This meant that thousands of colored workers would be eligible and available for employment in new occupations under the transfer agreement between government, management, and labor.

When this problem was first presented to it, management hesitated to act. Certain companies attempted to justify their position by citing past experiences. One firm related that in 1940 the *rumor* that Negroes would be used on assembly lines had occasioned a stoppage of work. Then, in September, 1941, the Packard Motor Car Company transferred two Negro metal polishers to defense work. Immediately 250 white workers staged a forty-minute sit-down strike. This work stoppage, however, was not the first instance that the problem had arisen. At several automobile plants, Negro union members had raised embarrassing questions in their locals relative to the inconsistency between the official pronouncements, the constitutional provisions of the U.A.W.–C.I.O. and the practices of local unions.

It soon became apparent that some of the local union officials would not or could not handle the matter satisfactorily, and the International Executive Board was forced to establish an Interracial Committee to deal with it. As specific difficulties arose, the international assumed its responsibility, stated its position, and issued instructions to local officials. With the gradual acceptance of the union's responsibility in the matter, it was possible to secure further action on the part of management. Finally, the two began to co-operate in meeting the issue.

Developments in the automobile industry are most instructive in that they illustrate the complicated interrelations between management and unions in expediting upgrading for Negroes in plants where there is intrenched opposition among a minority of white workers. At the outset, both management and labor were not inclined to face this problem and act, since it was clear that there would be difficulties. The constant pressure of Negro union members to secure the enforcement of constitutional provisions by the international made the union join government in urging management to act. When the employers did act, it became obvious that many of the local unions would not or could not control their members. Then management and labor slowly evolved a program of joint action. It was not until both were convinced that they had to face the problem that anything worth while was accomplished. The really effective action took place when management and labor

simultaneously issued statements of policy and developed programs for disciplinary action.[19]

Had there not been constitutional provisions in the C.I.O. prohibiting discrimination, the Negro union members would have had less support in their demand for equal upgrading. Had there not been firm conviction on the part of both labor and management that the problem had to be solved, much more time would have been wasted in trying to establish which of them was responsible for the situation. When management took steps to upgrade Negroes and white workers refused to work with them it became clear that the responsibility for initiating corrective action lay with the union. The international and its officers had to face the problem of establishing machinery for facilitating and enforcing the policies of the organization. When these steps had all been taken, Negro workers won the right to upgrading—a right which theoretically had always been theirs. The Detroit experience of the U.A.W. and the position of its president, R. J. Thomas, in his international and in the councils of the C.I.O. did much to encourage the establishment by other C.I.O. unions of workable machinery to deal with subsequent problems involving the employment and upgrading of Negroes.

As the necessities of war production occasioned the upgrading and introduction of Negroes into many new occupations and plants, the number of walkouts of white workers in protest to the introduction of Negroes increased. There seemed to be a wave of such occurrences, and the Negro press characterized them as "hate strikes." Many of the plants involved had contracts with C.I.O. unions.[20] An example of an early instance is offered by developments in the Westinghouse plant at Essington, Pennsylvania. In January, 1942, a Negro was hired as a machine-shop learner. His presence was strongly resented by white members of the United Electrical, Radio, and Machine Workers. Management promptly laid him off and reported that he had been threatened with bodily harm. Local 107 of the U.E.R.M.W. attempted to avoid the issue. Finally it reached the international. That body took a realistic view and stated that "it [securing the upgrading of Negroes] is primarily a question of getting our own members in some localities to meet the problem honestly and deal with it in accordance with the policy of the national organization."[21] By June, 1942, District Council No. 1 of the Philadelphia industrial area drew up and unanimously approved a program for facilitating and encouraging the employment and upgrading of colored workers. In the spring of 1943 the epidemic of "hate strikes" hit the Middle West. Detroit seemed to have the largest number of cases, but the walkouts spread to near-by industrial Ohio and elsewhere. The United Steel Workers were involved at the Timken Roller Bearing Company in Canton, the U.E.R.M.W. at the Hoover Company in the same city, and the Industrial Union of Marine and Shipbuilding Workers in the Bethlehem Shipyard at Sparrows

[19] For a detailed description of developments in the automobile industry in Michigan see my article, "Detroit and Negro Skill," *Phylon*, IV (1943), 131–43.

[20] Most of the early "hate strikes" occurred in plants organized or in the process of being organized by the U.A.W. Thus, this union was forced early in the war program to devise a technique for dealing with the problem. For a brief description of U.A.W. action at an aircraft plant in Ohio, see n. 40 below.

[21] Correspondence between an international official and the writer.

Point, Maryland. In each of these instances and in a score of similar situations the appropriate international either co-operated fully or took the initiative in enforcing its nondiscrimination policy.

A. F. OF L. ACTION TO COMBAT DISCRIMINATION

When, in the fall of 1943, it was alleged that a foreman of a government project refused to hire Negro workmen referred by a local union of the International Union of Operating Engineers, A. F. of L., on the ground that a number of white workers had threatened to walk off the job if colored were employed, the organization reaffirmed its opposition to race discrimination. The foreman involved was informed by the local union that any operating engineer who carried out this threat would be replaced. The union's president reported to the President's Committee on Fair Employment Practice as follows:

"I can assure you that our local unions are open to membership for those who qualify as operators .... and our local unions have been instructed that discrimination against applicants because of race, creed, or color will not be tolerated."[22]

In the Bay area of California there was much difficulty relative to the placement of Negro skilled and semiskilled workers in the shipyards during the earlier years of the present war. One of the established firms, the Moore Drydock and Shipbuilding Company, had used Negro mechanics during World War I and was ready to expand their use. Other yards would accept colored workers. These shipyards had closed-shop agreements with the Boilermakers' union. Despite the fact that the international had modified its regulations and authorized the establishment of Negro auxiliary unions, the Bay area locals would not clear Negroes for employment.

In response to continuing pressure from government, the international had assumed responsibility in the matter early in 1942, and jobs in many categories were opened to colored workers. Negro workers, however, were placed in an auxiliary in accordance with the rules of the organization. At the close of 1942 that auxiliary had several thousand members; and by March, 1943, there were over 20,000 Negroes in the shipyards of the Bay area. It has been repeatedly charged, however, that the number of Negro workers employed in the area has been limited by the actions of the Boilermakers' union, and there is dissatisfaction on the part of Negro shipyard workers on the West Coast with their second-class union status. In Los Angeles, for example, a Negro worker in the California Shipbuilding Corporation has announced that he intends to test the legal right of the union to insist upon his discharge while it refuses to accept him as a full member.[23]

At the Kaiser yards in Portland, Oregon, a similar situation arose. It was the occasion of much negotiation and finally reached the Metal Trades Department of the A. F. of L. The president of the department dispatched a strongly worded telegram to the secretary of the Portland Metal Trades Council, stating that its action was contrary to sound

[22] (Norfolk) *Journal and Guide*, September 11, 1943.

[23] Although Negroes object in general to their restrictions to "segregated" unions, the issue in the Boilermakers involved more than the relegation of Negroes to separate unions. In this case colored workers are restricted to auxiliaries which are subordinate to the main (white) locals in the area. Thus the Negro worker who is required under a closed-shop agreement to pay first-class dues for second-class membership claims that he suffers from discrimination as defined in Executive Order 9436.

judgment and patriotic duty, the President's Executive Order, and the declaration of the A. F. L. and Metal Trades Department against racial discrimination. Later the president of the Metal Trades Council and the secretary-treasurer of the Boilermakers' International joined government representatives in establishing the right of Negroes to work in all capacities in the Kaiser yards. Here again, however, auxiliary locals were established, and Negroes immediately began to work within the union to achieve first-class membership.

As this is being written, the whole matter of the union status of colored workers in the Boilermakers' union is being challenged on the West Coast. Negro shipyard workers in the Portland area have refused to pay union dues to the colored auxiliary and state that if they are to continue to contribute toward the support of the organization they want full membership and the security and protection thereof. Recently a large number of Negroes who refused to pay dues for membership in an auxiliary were discharged under the terms of the closed-shop agreement between the Kaiser yards and the union. The case was referred to the President's Committee on Fair Employment Practice.

The traditional opposition of the International Association of Machinists to Negro membership inevitably limited the use of colored labor in war industries. Early in the defense program the international took the position that the Negro did not present a problem to the organization because there were so few skilled Negro machinists.[24] When, however, the I.A.M. assumed jurisdiction over semiskilled production workers as well as craftsmen, a large number of qualified Negro workers were affected by the union's restrictions.

At the Nashville plant of the Vultee Aircraft Company, at the Boeing Aircraft Company plants at Seattle and Wichita, and at several shipyards on the West Coast local Machinists' unions declared they could not clear or refer colored men to defense jobs because of the ritual provision banning nonwhite persons from membership.[25] Then, in October, 1941, at the California hearings of the President's Committee on Fair Employment Practice, cases were presented alleging that Local Lodges No. 68 and No. 751 had refused to admit Negroes to membership or clear them for employment at the Bethlehem Shipyard in San Francisco and the Boeing Aircraft plant in Seattle. These cases were referred by the committee to President Roosevelt. He in turn discussed them with President Green of the A. F. of L., who conferred with Harvey Brown, president of the I.A.M., urging him to act upon the complaint "quickly and decisively." The effect of this action was to establish the precedent of issuing work permits to Negroes by these lodges of the Machinists' union. Other local lodges on the West Coast followed a similar procedure.[26]

[24] As a matter of fact, of course, the exclusionist policy of the union was the largest single factor limiting the number of Negro machinists.

[25] An example of the attitude of many local Machinists' unions is offered by a letter issued by the local at the Seattle Boeing Aircraft plant in August, 1939, and addressed "to whom it may concern": "The Aeronautical Mechanics Local 751, affiliated with the International Association of Machinists, permits membership in its organization only to 'competent white candidates.'" The international's ritual requires that each member promise "I will never propose for membership in this Association any other than a competent, white candidate" (*Ritual of the International Association of Machinists, Revised and Adopted by the Eighteenth Convention in Atlanta, Ga., September 17 to 27, 1928*, p. 9).

[26] Included among this number were Local Lodges No. 63 in Willamette and No. 79 in Seattle.

One of the problems encountered under the work-permit system was the matter of fees. The original agreement with the Boeing local in Seattle provided for the issuance of thirty-day renewable work permits. These cost $3.50, and the annual fee for Negro nonmembers thus cleared was $42.00. Full members, however, paid only $25.00 initiation fee and $1.50 dues per month. This meant that members paid $43.00 the first year and $18.00 per annum thereafter; Negroes on permits would pay $42.00 per annum. Naturally, the colored workers objected to this arrangement. It is reported that an adjustment has been made whereby Negroes who work on permits pay $3.50 for the first twelve months, and thereafter $1.50 per month.

Following the pattern on the West Coast, Negroes are being cleared by the I.A.M. in other sections of the nation. Thus at the Commonwealth Aircraft Corporation in Kansas City and the Beech Aircraft Company at Wichita, where the Machinists have closed-shop agreements, Negro workers have been cleared and are now working on production jobs. In a few other aircraft plants in the area, such as Boeing at Wichita and Curtiss-Wright at St. Louis, where the Machinists have bargaining rights, Negro workers are employed in similar capacities. In all these instances, colored members pay no fees. At the Curtiss-Wright plant, where there were some six hundred colored workers in the fall of 1943, an effort was made to organize them in a subsidiary union. This the Negroes have refused to accept.[27]

The most significant development in the I.A.M. occurred in Cleveland. In March, 1943, Local Lodge 54 accepted Negro employees at the Warner and Swasey plant into full membership, apparently with the tacit approval of the international. In connection with this development, Peter Gencope, organizing chairman of the shop committee of the plant, stated to colored workers:

"I am reminded that no matter where you go, if you have your union card with you then you will be recognized as a member of the machinist Lodge No. 54. . . . . There will be no separate meetings of white and Negro. You will sit in our regular meetings, with full voice and voting rights. . . . ."[28]

These developments in the Boilermakers' and Machinists' unions indicate that the internationals can take effective action to facilitate clearance of Negro workers.[29] They also show that, when sufficient pressure of public opinion, government persuasion, and economic necessity are exerted, these organizations will take such action.

THE SIGNIFICANCE OF RECENT EVENTS IN NEGRO UNION RELATIONSHIPS

There are two principal developments which are responsible for these events: the manpower requirements of war pro-

[27] An interesting development occurred at the Lockheed-Vega plane factories in Los Angeles. The company took the lead in integrating Negro workers and sought the co-operation of Local Lodge No. 727 of the Machinists. The local co-operated fully and actually initiated some Negroes, in violation of the ritual. In the summer of 1942 these colored members were dropped, but the local took steps to have the color bar removed through a referendum, thus demonstrating that the international had probably insisted upon observance of the ritual. The Boeing local of the Machinists is also reported to be in favor of initiating a resolution at the international's next convention to the effect that Negroes should enjoy full membership and rights incident thereto in the I.A.M.

[28] *Cleveland Call-Post*, March 3, 1943.

[29] The clearance of Negroes by the Machinists has been exclusively concentrated in areas in which the local union has departed from its former craft basis and is organized on an industrial-union pattern.

duction and the shift of the Machinists' and Boilermakers' unions from a craft to an industrial basis. The first of these occasioned the breakdown of skills, the concentration of war workers in single skilled and semiskilled jobs, and government's policy of nondiscrimination in employment as finally expressed in Executive Orders 8802 and 9346. It also resulted in many tight labor markets and the economic necessity for removing barriers to Negro employment in new industries, occupations, and firms.[30] The second brought the two largest metal-trades unions face to face with the problem of dealing with a large number of colored workers who were needed in war production.

The issuance of work permits to Negroes, the acceptance of them in auxiliary locals, and their clearance to war jobs without the payment of fees have not solved the old problem of full union membership for colored workers. It has, however, established a *modus operandi* for facilitating the utilization of Negroes on government-financed jobs. It has demonstrated that the A. F. of L. and the international unions involved can influence the policies and practices of their locals. Internationals can, when economic, public, and government pressures require it, modify long-standing practices of barring Negroes from employment in plants under their jurisdiction. While it is true, as Northrup observes, that the I.A.M. could, in accordance with its ritual, dismiss its colored members,[31] the international cannot again sustain the fiction that it is powerless, because of its ritual, to expedite the use of colored workers in plants where it has bargaining rights or closed-shop agreements. Nor can the Machinists or Boilermakers sustain the assertion that white and colored workers under their jurisdiction cannot work together. They are doing so today by the tens of thousands.

Northrup has aptly observed: "Any statement that the I.A.M. has changed its racial policy is premature at this time and will be as long as the exclusionist clause remains in the union's ritual."[32] The necessities of war production, however, are modifying the immediate effect of the ritual's exclusionist clause and in a few cases are actually negating it. Today thousands of Negro workers are being trained and employed in occupations which fall under the present jurisdiction of the Machinists and Boilermakers. Some of them have gained training and experience in skilled trades; a larger number have been working in single-skilled and semiskilled jobs. Some have been in shops with C.I.O. contracts, some in plants with A. F. of L. contracts, and a smaller number in open shops. They are now occupationally qualified in appreciable numbers. Those who are in A. F. of L. shops are attempting from within the union to break down the barriers to their full membership.

In the future it will be possible for government to point to the current experience to show that these unions can effect compliance with federal nondiscrimination policy. It can point to the internationals as the appropriate agencies to effect such results. If the practice of securing the employment of Negroes in shops controlled by these unions is extended long enough or if the govern-

[30] The removal of barriers to Negro employment is far from complete or satisfactory, but progress has been made and with it occupational advancement. For a statement of the situation in the spring of 1943 see my article, "The Employment of the Negro in War Industries," *Journal of Negro Education*, XII (1943), 386-96.

[31] Northrup, *op. cit.*, p. 220. Apparently just this happened at Lockheed-Vega local.

[32] *Ibid.*

ment's nondiscrimination policy is expanded to include contracts involving interstate commerce, it will be good business for the unions to admit colored members. Indeed, there are already signs that white union members will often take the lead in demanding such action. It is difficult for many of the new unionists[33] to understand why Negro workers should not pay full membership fees, and colored workers are constantly objecting to first-class fees and second-class membership.

It must be recognized that the relaxations which have been made in these two metal-trades unions to date may be of temporary moment. They have never been operative except on certain government-financed projects. The I.A.M. can invoke provisions of its ritual and declare existing Negro members ineligible or rescind its policy of issuing work permits and clearance. The Boilermakers' union can amend its rules governing auxiliaries and cease chartering such auxiliaries. Any of these acts could result in the exclusion of Negroes from jobs where these unions have certain types of contracts. The continuing pressures for additional relaxations of the color line in these organizations[34] will combine with existing government policy[35] and the economic necessities of the war to prevent such action for the duration. What will happen in the postwar period will depend in large measure upon the type of economy we have. This much is certain; the fact that the two largest metal-trades internationals have on occasion assumed responsibility for effecting the employment of Negroes will have an influence upon the future status of the black worker. It will certainly place the unions involved in a difficult position with at least some of the public when and if they attempt to justify practices which arbitrarily exclude Negro workers from employment. If the necessities of war, future government policy, or public opinion require the continued clearance and employment of Negroes, internal and external forces will combine to challenge the ritual bars to Negro membership in the larger metal-trades unions. On the other hand, if there is an immediate, long, and serious depression, it is doubtful if the Negro's status in the Machinists' and Boilermakers' unions will be much improved over his pre-war position. It is because of the tenuous status he now has in these

[33] Most of the inflated membership today is new and not permeated with the craft-union-mindedness of much of the leadership. In September, 1943, the Providence (R.I.) Urban League reported that Local 308 of the Boilermakers' union unanimously went on record against the formation of an auxiliary local for colored workers and in favor of accepting such workers into full membership.

[34] In September, 1943, the National Association for the Advancement of Colored People filed a brief with the National Labor Relations Board in relation to a case to determine whether the machinists' local of the United Steel Workers, the Bay City Metal Trades Council, A.F. of L., or the welders should have bargaining rights at the Bethlehem Alameda (California) Shipyard and Shipyard Division of the Bethlehem Steel Company. The National Association for the Advancement of Colored People pointed out the restrictions on Negroes in the Bay Cities Metal Trades Council and the unrestricted membership of colored workers in the steel workers and the welders. It then stated: "On the facts of the instant case, it is submitted that the opportunity which would be afforded to all workmen to enjoy real rights of union membership without racial discrimination by the welders [an independent union] and the steel workers, but denied them by the Trades Council [made up of A.F. of L. locals] should be one of the controlling factors in favor of the bargaining units and elections therein proposed by the welders and machinists [of the Steel Workers] and against the petition of the Trades Council" (press release of National Association for the Advancement of Colored People, September 17, 1943).

[35] For a description of government activities in this field see Leon A. Ransom, "Combatting Discrimination in the Employment of Negroes in War Industries and Government Agencies," *Journal of Negro Education*, XII (1943), 405–16.

unions that the Negro worker is fighting to achieve full membership with its larger guaranties for the future.[36]

The recent action of the C.I.O. in effecting the upgrading of Negro workers is significant because it, too, involved the establishment of a *modus operandi*. In this instance, international officers have demonstrated that they can influence the actions of recalcitrant locals. In the future it will be difficult for these officers to justify to an increasing number of Negro members their failure to enforce nondiscriminatory constitutional provisions and statements of policy.[37] In the postwar economy, when unions will insist upon the retention of workers in accordance with seniority, the application of nondiscriminatory policies will be of great importance to Negro unionists, although it will involve many difficult short-run problems.

LABOR UNIONS AND THE NEGRO COMMUNITY

The growth of Negro populations in industrial centers and the development of industrial unionism have changed community attitudes. When, for example, the C.I.O. solicited Negro membership and guaranteed no discrimination on account of race, creed, or color, many Negro liberals saw in the new industrial unions the complete economic salvation of colored Americans. Here, at long last, they found a labor movement which not only accepted but courted Negro labor. After years of failure in this field, Negroes, who were in accord with the ideology of the labor movement and tormented by the practices of some unions and the resultant jibes of antiunion leaders of the race, rejoiced that their theory had justification in fact. Many despaired of securing any relaxation of exclusionist and discriminatory practices in certain craft unions; others saw in the C.I.O. the automatic and complete economic emancipation of the black worker. As would be expected under such circumstances, indorsement and hopes went too far. Disillusionment was sure to follow such all-out support of a new and, at times, undisciplined organization.

There were, however, several important developments in the field of Negro union relationships incident to the rise of the C.I.O. The resulting wider participation of Negroes in the labor movement and the inclusion of occupations in which Negroes were concentrated in organizational campaigns brought to the Negro community more actual contacts with labor organizations than it had ever had before.[38] Large numbers of Negroes became conscious of labor unions, and the movement became accepted among them as they became accepted by the movement. Thus, today, in most of the in-

[36] Negroes realize that the principal purpose of union exclusion in the past has been to exclude them from competition (see Northrup, *op. cit.*, p. 209). Obviously, the urge to invoke such restrictions is greatest in periods of slack demand for labor; conversely, the most favorable period for removing or modifying them is in a time of excessive demand for labor. The present is a propitious time for dealing with this problem for another reason. It has long been recognized that craft unionists are extremely "work-scarcity conscious," and the present mass shipbuilding and aircraft membership of the Boilermakers and Machinists is less so than the old-line leadership. This leadership, however, is constantly thinking of the future and the possible intense competition for a limited number of jobs in the postwar period. This is probably the basis for its disinclination to remove restrictions on nonwhites.

[37] In some of the larger C.I.O. internationals, Negro unionists have had valuable lessons in how to influence union policies and practices. They have also secured elections to strategic offices and designation to committees. These experiences should be valuable in assisting them to protect their current gains in the future.

[38] The present industrial nature of the Machinists' and Boilermakers' unions has had a similar effect.

dustrial areas of the nation, there is a conviction on the part of the vast majority of articulate colored citizens that the Negro worker should and must become a part of the forces of organized labor. A decade ago only a small minority of colored citizens shared this belief. A part of the difficulties which face Negroes in labor unions is due to their inexperience and unfamiliarity with organized labor. This deficiency has often led to a lack of participation on the part of Negroes in the affairs of local unions. In some instances Negro workers have requested or accepted occupational seniority—a feature of certain C.I.O. contracts which froze colored workers in unskilled occupations.[39] In other instances Negroes who had been separated from white people all their lives did not feel free to attend union meetings with them.

During the depression these patterns developed in industries in which there was a slack demand for labor and in which the union was in no position to deal effectively with the problem of upgrading. In such industries the organization was usually held together by a minority of members who were thoroughly schooled in the ideology and methods of unionism. Few Negroes were so qualified in the basic industries. There were, however, a few outstanding exceptions. In the meat-packing industry, for example, under the able leadership of experienced colored unionists, Negroes participated in union activities and secured significant occupational advances. This was a consumers' goods industry, and it never suffered the degree of unemployment which typified durable goods production. The economic factor combined with able Negro leadership (developed chiefly in the United Mine Workers of America) to illustrate how labor organizations can effect new and better job opportunities for colored workers. This lesson is most important today. Recent occurrences, such as the emergence of the Negro as a powerful factor in Local 600 of the U.A.W.–C.I.O. at the Ford Motor Company, in the industrial unions in the Columbus, Ohio, area,[40] and in the National Maritime Union indicate that further progress is being made in this field.

The experience of Negro workers in the conversion of the automobile industry and similar experiences with labor unions in other areas of war production have created a much more realistic attitude of Negroes toward organized labor. No longer are labor unions damned or praised without reservation. Rather, they are being analyzed carefully on the local level and evaluated in terms of their performance.[41] In instances when they

[39] Weaver, "Detroit and Negro Skill," *Phylon*, IV (1943), 135–36.

[40] At the Columbus, Ohio, Local No. 927 of the U.A.W.–C.I.O. significant progress has been made by Negroes. The Curtiss-Wright plant, where this union now has a contract, was the scene of a strike when a Negro was upgraded in the machine-tool department. Although there were many grievances unrelated to the race issue, one of the union officials accentuated the racial factors. The international promptly pulled him out of the area, effected a settlement, and insisted upon complete integration of Negro workers. Today there are over a thousand Negroes in the plant, and five of the eleven delegates recently elected to the U.A.W. convention are colored.

In the Columbus union of the United Steel Workers of America, there is significant Negro participation. The vice-president of the Area Industrial Union Council is a Negro steelworker. Colored men serve as president of one of the steelworkers' locals, vice-president in two others, and recording secretaries in two locals.

[41] An early example of this is offered by the switch of Negro workers at the Ingalls Iron Works in Birmingham, Alabama, from the C.I.O. to the A.F. of L. (see my "Racial Employment Trends in National Defense," *Phylon*, II [1941], 337–58).

A labor commentator in the *Chicago Defender* reports these recent incidents: "In Chicago nearly 500

are not fair, it is being realized that their behavior is a reflection of the prejudice of a segment of the rank-and-file membership and some officials. Negro workers no longer turn *en masse* against all labor unions in such situations. They demand from unions, as they demand from employers, the right to work in war production. They fight to gain admittance and to secure all the rights and privileges of membership.

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WHAT IS DRY EXCHANGE?
A CONTRIBUTION TO THE STUDY OF ENGLISH MERCANTILISM[1]

RAYMOND DE ROOVER

WRITING on foreign exchange, one of the leading mercantilists remarked, as late as the end of the seventeenth century, that the subject remained a mystery to many, if not to most, merchants and "was indeed the greatest and weightiest mystery" that was "to be found on the whole map of trade."[2] As a matter of fact, the mercantilists were never able to solve this mystery completely, and it has remained largely unsolved up to the present time. In order to understand the writings of the English mercantilists one should realize that business practices today are very different from what they were in the sixteenth and seventeenth centuries. Most modern critics, in dealing with mercantilist thought, have made the mistake of overlooking this fact. As far back as the Middle Ages, there existed a self-regulatory mechanism of foreign exchange, but modern theorists have failed to see that it did not operate as it does today. As a consequence, they have not always understood what certain utterances of the mercantilists—especially of the early mercantilists—really meant. Some of their theories are, of course, fallacious; but much of what they wrote makes good sense, if one accepts certain underlying assumptions which are not always explicitly stated but which contemporaries took for granted.

The mercantilists in their writings made a distinction among four different kinds of exchange: petty or manual exchange (*cambio minuto o commune*); merchants' or "real" exchange (*cambio reale*); dry exchange (*cambio secco*); and fictitious exchange (*cambio fittizio*).[3] "Petty exchange" is simply the exchange of one kind of coin for another—gold for silver or foreign for domestic currency—and falls outside the scope of this study. "Merchants' exchange" refers to the exchange by bills in which money was received in one place in order to be repaid in another place and in a different kind of currency. Prior to the Stuart revolution in England bills of exchange were always foreign bills and always involved an exchange transaction, whence the name of bill of "exchange." The nature of "dry exchange" and of "fictitious exchange" has given rise to a great deal of confusion; and to most people the meaning of these terms remains obscure. R. H. Tawney has stated that "dry exchange was nothing more mysterious than what today would be called a fi-

[1] This study is based partly on material collected in 1938 during a trip to Italy. I wish to thank the Belgian Fonds National de la Recherche Scientifique, whose grant made this trip possible.

[2] John Scarlett, *The Stile of Exchanges* (London, 1682), cited by E. Lipson, *Economic History of England*, III (2d ed.; London, 1934), 80.

[3] Gerard de Malynes, *Consuetudo vel Lex mercatoria* (London, 1656 ed.), pp. 252–53. Cf. Jan Ympyn [alias Jan Ympens Christoffelssone], *A Notable and Very Excellente Woorke Expressyng and Declaryng the Maner and Forme How To Kepe a Boke of Accomptes or Reconynges, Verie Expedient and Necessary to All Merchantes, Receivers, Auditors, Notaries, and All Other* (London, 1547); reprinted in *Economisch-historisch Jaarboek*, XVIII (1934), 43–48. I have given in parentheses the Italian form of the terms. The authors of the time mix Italian and Latin.

nance bill."[4] The accuracy of this definition has been questioned by E. A. J. Johnson, who points out that it does not fit the description given by the English mercantilist, Gerard de Malynes. Johnson, however, does not attempt to give a better definition than Tawney's; he merely confines himself to the remark that "dry exchange" is apparently without counterpart among the business practices of the present time.[5] One purpose of this study is to give an accurate description and definition of "dry exchange."

In past centuries there was a close connection between banking and exchange transactions. It might even be said that all banking originated in either manual or merchants' exchange. The medieval money-changers (It. *cambiatori;* Fr. *changeurs*) specialized in manual exchange. Deposit banking grew out of this activity, because the money-changers developed a system of local payments by book transfer. The great inconvenience of making all payments in specie, especially the waste of time involved in counting coin, ultimately led to the establishment of transfer banks, either public or private, in all the more important commercial centers on the European continent. The transfer banks accepted deposits and facilitated the making of local payments. As a rule—there are exceptions—they did not have correspondents abroad; nor did they deal in bills of exchange.[6] This type of activity was the province of the foreign banker. In England at the time of Elizabeth, the term "banker" had the connotation of an exchange specialist and was synonymous with "exchanger."[7] Even in the eighteenth century, Postlethwayt, following Savary de Bruslons, still defined banking as "a traffic or commerce in money, which is remitted from place to place, from one city to another, by correspondents and by means of bills of exchange."[8] Foreign banking was usually associated with trade, but not all merchants were merchant-bankers.[9] In order to engage in foreign banking a merchant needed to be well provided with capital and to have a network of branches, agencies, or correspondents in foreign parts. Very often bankers were old merchants who had accumulated a large capital in the course of a successful business career and who now preferred to employ their "stock" in the purchase of bills rather than "in adventure of the sea."[10] The great Italian companies of the Middle Ages, such as the Peruzzi or the Medici, combined trade and foreign banking, that is, dealings in bills of exchange. In England the two types of banking merged in the course of the seventeenth century, after the goldsmiths began to keep a "running cash" for the convenience of merchants and country gentle-

[4] Introduction to Thomas Wilson's *Discourse upon Usury*, ed. R. H. Tawney (New York, 1925), p. 75.

[5] *Predecessors of Adam Smith* (New York, 1937), pp. 49–50, 327.

[6] On this topic see Abbott Payson Usher, *The Early History of Deposit Banking in Mediterranean Europe* (Cambridge, Mass., 1943), I, 3–25.

[7] R. D. Richards, *The Early History of Banking in England* (London, 1929), p. 2.

[8] "Banking," *Universal Dictionary of Trade and Commerce*, ed. Malachy Postlethwayt (2d ed.; London, 1757), I, 193.

[9] On the combination of trade and banking, see N. S. B. Gras, *Business and Capitalism* (New York, 1939), pp. 141–51.

[10] Clement Armstrong denounces the "rich old merchants" who "occupy their money by exchange, winning profit both inward and outward, which is plain usury" (spelling modernized) (see Armstrong's tract "A Treatise concerning the Staple" published by Reinhold Pauli, in *Drei volkswirthschaftliche Denkschriften aus der Zeit Heinrichs VIII. von England* [Göttingen, 1878], p. 32).

men and to discount both domestic and foreign bills.

Prior to that time bills were *not* discounted and were *not* negotiable, since they could not circulate by way of indorsement.[11] Moreover, there existed no domestic bills. Because of the usury prohibition, interest could not be charged overtly but was concealed by being included in the rate of exchange.[12] Bills, instead of being discounted, were bought and sold at a price which varied with the fluctuations of foreign exchange. The outright purchase of a bill necessarily involved the extension of credit, since the buyer gave a certain sum of money in exchange for a document which was payable at some time in the future, in a different kind of currency, and in a different place.

The usury prohibition should be taken more seriously than it usually is. One should not assume that the canonist doctrine on usury was merely a topic for academic discussion among theologians. The opposite is true: the usury prohibition had a tremendous influence on business practices all through the Middle Ages, the Renaissance, the Reformation period, and even down to the French Revolution. Since the taking of interest was ruled out, such a practice had to be concealed by resorting to various subterfuges, which the merchants justified by all kinds of sophisticated or fallacious arguments.

As I have pointed out elsewhere, early non-negotiable bills involved two payments and four persons: usually (1) a "deliverer" bought a bill for ready cash from (2) a "taker," who drew on one of his correspondents or agents abroad; at maturity this correspondent, called (3) "payor," was expected to pay a given amount of foreign currency to (4) the payee, in whose favor the bill had been made out.[13] In most cases the payor was an agent of the taker; and the payee, of the deliverer. The terms "taker" and "deliverer" occur so frequently in the mercantilist literature that it is worth while to clarify their meaning. A "taker" (It. *prenditore;* Fr. *preneur;* D. and Fl. *nemer*) was usually a borrower who "took up money by exchange," that is, who raised money by selling claims on foreign balances. A "deliverer" (It. *datore;* Fr. *donneur;* D. and Fl. *gever*) was usually a person who had money to lend and was willing to buy claims on balances abroad in the expectation of gain. Bankers were usually deliverers, but they occasionally became takers, if they needed cash and were forced to "draw" because they could not wait for their correspondents to "remit." The same is true today. Bankers are usually lenders, but they occasionally become borrowers, if they have to rediscount bills with the central bank in order to replenish their reserves.

Unless otherwise specified, exchange quotations in former centuries applied to bills payable *at usance.* Rates were a trifle lower or higher for bills payable either at *half-usance* or at *double-usance.* A bill payable at usance was a bill which became due after a certain period of

[11] On this topic see Usher, *op. cit.*, pp. 73–109.

[12] Jacques Savary, *Le parfait négociant ou instruction générale pour ce qui regarde le commerce* (2d ed.; Paris, 1679), I, 274: "Il y a une chose à remarquer en cet article, qui est considérable, en ce qu'il défend de comprendre dans les lettres de change l'intérêt avec le principal, car l'on n'y en comprend jamais aucun, mais seulement la perte du changement des deniers d'un lieu en un autre, que l'on appelle change, et non pas intérêt." In other words, French law did not allow the adding of interest to the face value of a bill, because there would be duplication, since the exchange rates already included interest.

[13] Raymond de Roover, "Money, Banking, and Credit in Medieval Bruges," *Journal of Economic History,* II (suppl., 1942), 55.

time determined by merchant custom. Between London and Antwerp, Amsterdam, Middelburg, or Hamburg, usance was one month after date; half-usance, fifteen days; and double-usance, two months. According to the custom of London, the usance for bills to and from Italy was three months after date. A comparison of the data contained in medieval and seventeenth-century handbooks on commerce shows that the merchant custom with regard to usance remained practically unchanged for several centuries.[14]

In the sixteenth and seventeenth centuries London was the "head of the exchange" with the Low Countries and Germany.[15] In other words, London "gave the pound sterling" to Antwerp, Amsterdam, Middelburg, and Hamburg. These phrases mean that the exchange rates between London and the aforesaid places were expressed in a variable amount of foreign currency for each pound sterling. For example, the exchange on Antwerp was quoted in so many shillings and *deniers* (pence) Flemish or groat per pound sterling.[16] This method of quoting the exchange by using the pound sterling as the term of comparison was followed both in Lombard Street and on the Antwerp *bourse*.[17] In London the exchange rates with Italy and France were quoted according to a different system. In this case the "head of the exchange" was abroad, and the French *écu* of three *livres* or the Venetian ducat, for instance, was the fixed term of comparison, while the English currency was the variable term. The French and Italian exchanges, consequently, were likely to fluctuate in the opposite direction from the others. When the latter were falling, the former tended to rise, and vice versa.[18]

The early English mercantilists, in their discussions on foreign trade, paid little attention to the French and Italian exchanges but were greatly concerned with the course of the exchange with the Low Countries. This attitude is understandable, if one considers that, in the time of Gresham, Malynes, Misselden, and Mun, first Antwerp and later Amsterdam were the financial centers of western Europe and the main markets for English cloth. In order to avoid confusion I shall follow the example of the mercantilists and confine the discussion to the exchange between London and

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[14] Cf., e.g., the data furnished by Samuel Ricard, *Traité général du commerce* (rev. ed.; Amsterdam, 1781), II, 163, with those supplied by Giovanni di Bernardo da Uzzano, who wrote his *Pratica della mercatura* in 1442 (published as Vol. IV of Giovanfrancesco Pagnini's *Della decima* [Lisbon and Lucca, 1766]; the relevant data are given on pp. 100–103).

[15] Gerard de Malynes, *A Treatise of the Canker of England's Commonwealth* (London, 1601).

[16] The Flemish pound was also called the "pound groat" and was subdivided into 20*s*. of 12 *deniers* each. The standard abbreviation is £ *s*. *d*. Fl. or £ *s*. *d*. gr. The latter form will be used in this study.

[17] In the Middle Ages a different system was in use. The exchange between London and Bruges was quoted in a variable amount of sterling per imaginary *écu* or *scudo* of 24 gr. (see Da Uzzano, *op. cit.*, pp. 140–41, and *Libro di mercatantie et usanze de' paesi*, ed. Franco Borlandi [Turin, 1936], pp. 16–17).

[18] M. van Velden, *Fondament van de Wisselhandeling* (Amsterdam, 1629), pp. 117–18 and *passim*, contains valuable information and tables with regard to exchange and arbitrage. The book shows how computations were made. The writer owns a copy of van Velden's book. The Library of Congress reports that no other copy is known to exist in the United States and that no reference to another copy was found after an extensive search in Dutch bibliographies. Information of the sort given by van Velden is often found in other handbooks on commerce (see, e.g., Lewes Roberts, *The Merchants' Mapp of Commerce* [London, 1638], II, 24; and Ricard, *op. cit.*, II, 163). Apparently both van Velden and Roberts copied their examples from Giovanni Battista Zuchetta, *Prima parte della arimmetica per la quale.... si risolve.... ogni dubbio mercantesco* (Brescia, 1600).

the Low Countries. This exchange was favorable to England when it was high, that is, when the amount of Flemish currency offered for £1 sterling exceeded the mint par. The exchange was unfavorable to England when it was below par and when the pound sterling, on the basis of weight and fineness, bought a less than equivalent amount of Flemish currency.

Owing to the existence of seigniorage and of other obstacles to the free flow of the precious metals, the specie points were farther apart in the sixteenth and seventeenth centuries than they are today.[19] As a result, the exchange rates could fluctuate within a wide range without touching either the upper or the lower limit set by the import and export specie points.

For the sake of clarity, it might be well to repeat that exchange dealings were confined to time or *usance* bills and that interest was included in the rate of exchange because of the usury prohibition. One should also keep in mind that the rate of exchange between England and the Low Countries was expressed in so many shillings and *deniers* Flemish or groat per pound sterling both in Antwerp and in London. Under conditions of equilibrium the exchange rate in these two places fluctuated between the specie points. In addition, equilibrium required that the pound sterling be rated higher in London than in Antwerp for reasons which will be given below. If we assume the existence of a hypothetical sight rate pegged to the mint par, the London rate (of the pound sterling in Flemish currency payable at usance in Antwerp) was normally one, two, or three points above the mint par. At the same time the Antwerp rate (of the pound sterling payable at usance in London) was normally a few points below par. If the hypothetical sight rate were now allowed to fluctuate within the specie points, the two time rates would follow the lead; they could also be either above or below the mint par, but the Antwerp rate had always to remain below the London rate or there would be no equilibrium.[20] Interest was the dominant factor in determining the margin between the two time or usance rates.

This point is given due emphasis in the memorandum or report prepared by the royal commission on the exchanges in 1564.[21] As this report explains, the pound sterling is valued at approximately 22*s.* 4*d.* Fl. or gr. whenever the exchange goes at 22*s.* 6*d.* gr. in Lombard Street and at 22*s.* 2*d.* gr. in Antwerp, that is to say, halfway between the two rates. The margin above and below 22*s.* 4*d.* gr., as the memorandum points out, represents interest.[22] Dr. Thomas Wilson

[19] The result of seigniorage was to widen the spread between the specie points (see Jacob Viner, *Studies in the Theory of International Trade* [New York, 1937], p. 378).

[20] The report of the royal commission on the exchanges in 1564 claims that the mint par was 23*s.* 5*d.* gr. per pound sterling, which, however, was quoted at 22*s.* 6*d.* gr. in Lombard Street and at 22*s.* 2*d.* gr. on the Antwerp *bourse*. Apparently the exchange rate was below par in both places and perhaps even at (or below) the English export point, since the report states that specie was leaving England and that the "terms of trade" were in favor of the Low Countries. In 1564 the English government was still paying off past liabilities on the Continent. This circumstance explains sufficiently why the exchange rate and "the terms of trade" were both unfavorable to England.

[21] Part of this document is published in R. H. Tawney and E. Power (eds.), *Tudor Economic Documents* (New York, 1924), III, 346 ff. The passage referred to in the next sentence is on p. 349.

[22] A modern economist would say that the sight rate was 22*s.* 4*d.* gr. whenever the rate for time or usance bills was 22*s.* 6*d.* gr. in Lombard Street and 22*s.* 2*d.* gr. on the Antwerp *bourse*. However, there was no sight rate in the sixteenth century. Exchange dealings were confined to time bills.

does not miss the point, either. He observes that the banker or deliverer is bound to gain, "because the price of money by exchange from London to Antwerp is ever dearer and higher by three or four pence in the pound than it is from thence to London."[23]

Dr. Thomas Wilson's astute observation is of very great importance. A London banker who employed his money in exchange was likely to be a deliverer both in Lombard Street and on the Antwerp *bourse* (through a representative). A person thus operating on the exchange could make a profit only as long as the exchange rate in Antwerp kept below the London rate.[24] This assertion can best be proved by means of figures.

Let us take a hypothetical case involving the purchase in London of a bill on Antwerp and the return of the proceeds thereof from Antwerp to London by re-exchange. In order to give the illustration a color of reality, the exchange rates used will be those mentioned in the report of the royal commission of 1564. The deliverer, A, in London, having £100 st. to spare, decides to buy a bill on Antwerp at the prevailing rate of 22*s.* 6*d.* gr. per pound sterling. B, the taker, needs £100 st. in London, but he does not have this sum available, though he has money coming to him in Antwerp. A and B will easily come to terms by exchanging money for a bill on Antwerp. In return for a loan of £100 st. B makes out a bill, payable at usance in Antwerp by his agent, D, in favor of A's agent, C, for the value received from A, the deliverer or banker. When this bill matures at the end of one month, C collects from D the sum of £112 10*s.* gr. or the equivalent of £100 st. at 22*s.* 6*d.* gr.

A, the banker in London, now has a balance of £112 10*s.* gr. standing to his credit in Antwerp. Instead of keeping this money idle, he instructs his agent, C, to seek out a taker and to remit the sum of £112 10*s.* gr. to London by exchange. In pursuance of these instructions, C buys from F a usance bill on London at 22*s.* 2*d.* gr. per pound sterling and sends it for collection to A, the original deliverer in London. When this bill matures, A collects £101 10*s.* 1*d.* st. or the equivalent of £112 10*s.* gr. at 22*s.* 2*d.* gr. per pound sterling (see Chart I). By thus keeping his money running on the exchange, A has made a profit of £1 10*s.* 1*d.* st. on £100 st. in two months, or a return of about 9 per cent a year.

It makes absolutely no difference whether computations are made with Antwerp or with London as a starting-point. A deliverer in Antwerp who had £100 gr. or Fl. to invest would receive in London £90 4*s.* 6*d.* st., if he bought a bill on London at the rate of 22*s.* 2*d.* gr. per pound sterling. If this money were returned to Antwerp at 22*s.* 6*d.* gr., it would bring £101 10*s.* 1*d.* gr. there, that is £100 gr. plus a profit of £1 10*s.* 1*d.* gr. This is also a return of a little more than 9 per cent.

For purposes of analysis it might be desirable to isolate the rate of interest and to eliminate all other causes of exchange fluctuations. Let us, therefore, assume that the rate of exchange varied only in response to changes in the rate of interest. Under those conditions a rising exchange in London always meant a rise in the rate of interest, since the taker had to promise a larger amount of Flemish currency, payable overseas, in

[23] *Op. cit.*, pp. 306 f.

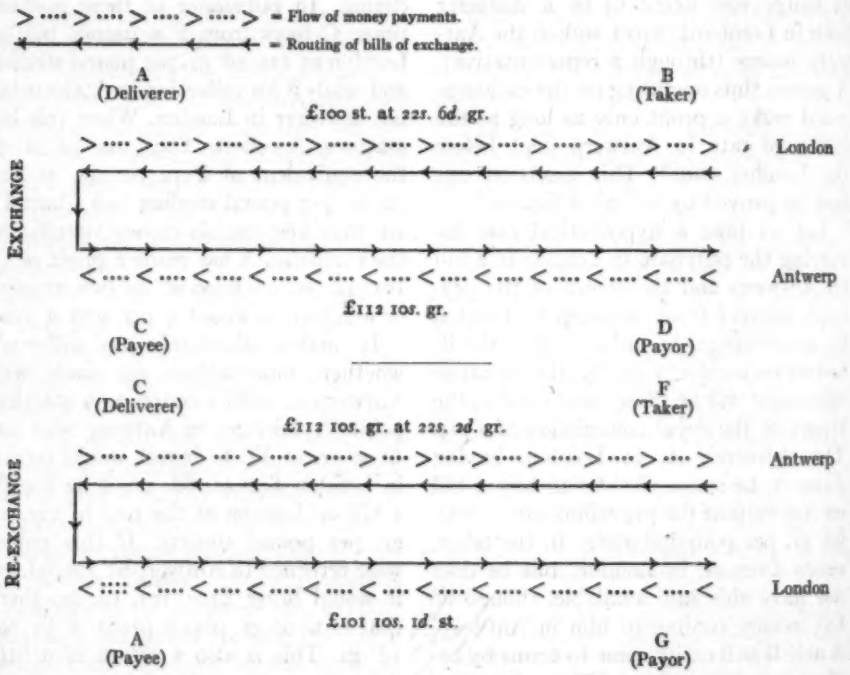
[24] In the Middle Ages the reverse was true. Since the "head of the exchange" was in the Low Countries instead of in England, the rate in London was usually below the rate in Bruges. Usually the *écu* or *scudo* of 24 gr. was rated between 20 and 24 sterlings in Bruges and between 18 and 22 sterlings in London (see *Libro di mercatantie*, pp. 16 f.).

order to receive in London the same amount of English money. In Antwerp, however, the reverse was true. A falling exchange corresponded to a rise in the rate of interest, since the taker received less than before in return for a promise to pay the same amount in English currency.[25] It follows that a widening of the distance between the Antwerp and the London exchange rates always corresponded to a rise in the rate of interest. On the other hand, if the distance between the two rates became narrower, such a move reflected a fall in the rate of interest, since the taker or borrower always benefited from a falling exchange in London and from a rising exchange in Antwerp.[26]

It also follows from this argument that the discrepancy between the London and the Antwerp rates was greater for bills payable at double usance than for bills payable at usance. On the other hand, the gap between the two rates was not so great for bills payable at half-usance as for bills payable at usance. In other words, the margin between the London and the Antwerp rates increased with the remoteness of the maturity date as well as with a rise in the rate of interest.

CHART I

EXAMPLE OF EXCHANGE AND RE-EXCHANGE BETWEEN LONDON AND ANTWERP BASED ON A HYPOTHETICAL CASE



[25] Cf. Malynes, *The Canker of England's Commonwealth*, p. 28.

[26] Edward Misselden, *The Circle of Commerce or the Ballance of Trade* (London, 1623), p. 108.

Always assuming that the rate of exchange varied only in response to changes in the rate of interest, the deliverer or lender was bound to gain as long as the Antwerp rate stayed below the London rate. If the two rates became equal, interest would be zero, and the banker would not make any profit. If the Antwerp rate rose above the London rate, interest necessarily would be a negative quantity. The banker, instead of receiving interest, would be paying a fee to the borrower for the doubtful privilege of lending money. Such a condition would not be compatible with equilibrium: no one would be willing to lend. The lenders would withdraw from the money market, because they would prefer either to hoard their money or to take advantage of alternative opportunities for investment. For example, a merchant-banker could invest his money directly in trade, if the outlook on the exchange was unpromising.

The proposition set forth in the preceding paragraph can easily be demonstrated arithmetically. Table 1 shows how the interest rate increases or decreases to the extent that the gap between the London and the Antwerp rates expands or contracts. The table also shows what happens to the rate of interest when the two rates are equal and when the London rate for usance bills is below, instead of above, the Antwerp rate.

Today discount is deducted in advance from the face value of a bill. In the sixteenth and seventeenth centuries, however, bills were purchased outright at a given rate of exchange instead of being discounted. The consequence was that the banker's gain remained uncertain until return was made by re-exchange, since the interest rate could change while a bill was traveling from London to Antwerp. If the interest changed, the second bill for the re-exchange from Antwerp to London would be purchased at a rate of exchange different from that which prevailed on the Antwerp *bourse* at the time of the creation of the first bill. It was, therefore, impossible for a banker to know his profit in advance. The presence of disturbing factors other than changes in the rate of interest further increased the uncertainty of gain. As Malynes explains in his *Lex mercatoria*, "Know ye, therefore, that the benefit or profit of exchange is never known directly, but by the rechange thereof."[27] Misselden

TABLE 1

CHANGES IN THE RATE OF INTEREST ACCORDING TO VARIATIONS OF EXCHANGE RATE IN ANTWERP AND IN LONDON

Exchange Rate in London per Pound Sterling	Purchase Price of Bill on Antwerp in London (English Money)	Proceeds of Bill in Antwerp Reinvested in Bill on London (Flemish Money)			Exchange Rate in Antwerp per Pound Sterling	Proceeds of Second Bill in London (English Money)			Profit or Loss over a Two Months' Period			Rate of Interest (In Percentage)
		£	s.	d. gr.		£	s.	d. st.	£	s.	d. st.	
22s. 6d.	£100 st.	112	10	0	22s. 2d.	101	10	1	1	10	1	9.025
22s. 7d.	£100 st.	112	18	4	22s. 1d.	102	5	3	2	5	3	13.575
22s. 5d.	£100 st.	112	1	8	22s. 3d.	100	15	0	....	15	0	4.500
22s. 6d.	£100 st.	112	10	0	22s. 6d.	100	0	0	....	....	.....	0.000
22s. 6d.	£100 st.	112	10	0	22s. 8d.	99	5	3	Loss	14	9	Negative

[27] Malynes, *Lex mercatoria* (London, 1656 ed.), p. 248. This passage is quoted with approval by Misselden, *op. cit.*, p. 104.

confirms this statement when he writes that the gain or loss on exchange transactions cannot be known but by the return of the money which was at first delivered.[28] Because of this uncertainty of gain, it was argued by the merchants that dealings in exchange were not usury but a permutation or a purchase of monies which did not involve unlawful bargains. This argument was not accepted by some of the more enlightened divines. Clement Armstrong and Dr. Thomas Wilson, in particular, saw clearly enough that, as long as the money market was not greatly upset, the deliverer ran little risk (not even once in a hundred times) of suffering a loss of capital. They contended—not without reason from their point of view—that interest was being charged under the cloak of exchange and that the whole business of foreign banking was nothing but "plain" or "flat" usury.[29] Of course, Armstrong and Wilson denied that the banker was entitled to receive interest even on grounds of cessant gain or opportunity cost.[30] Moreover, they overlooked entirely that the banker might be entitled to a compensation in order to cover his operating costs and the credit risk which he assumed.

The exchange rates varied not only in response to changes in the rate of interest but also in response to alterations in the mint par and to shifts in the position of the balance of trade. How did these influences react upon the exchange rates?

In case the currency were debased in England, the exchange would fall drastically both in Antwerp and in London. In other words, the exchange rates would drop from a higher to a lower level. If the debasement occurred in the Low Countries, the value of the pound sterling was likely to increase in terms of Flemish currency both at home and abroad. The history of exchange fluctuations during the sixteenth century shows that the exchange rates responded to alterations of the monetary standard, either in England or overseas, in the manner which one would expect from the lessons of monetary experience. In 1514 the mint par stood at 28*s.* 9*d.* gr. per pound sterling according to an assay made by the officers of the mint.[31] As a result of Henry VIII's and Edward VI's debasements, the pound sterling dropped as low as 13*s.* 4*d.* gr. on the Antwerp *bourse*.[32] After the recoinage of 1561 the exchange recovered and rose to 22*s.* 4*d.* gr. or thereabouts.[33] In 1575 it advanced from this level to 24*s.* gr. as a result of debasement in the Low Countries. A few years later, in 1586, the exchange reached the peak of 33*s.* 4*d.* gr. because of the continuous depreciation of the Flemish currency.[34] As no further debasement occurred either in England

[28] *Op. cit.*, p. 116.

[29] Armstrong, "A Treatise concerning the Staple," in Pauli, *op. cit.*, p. 32; Wilson, *op. cit.*, pp. 271, 306–13. Malynes agrees and states in his *Canker of England's Commonwealth* (p. 120) that "the difference between those that deliver money at interest or by exchange, in regard of usury, consists only in the name, for they have both an intention of gain upon money."

[30] Some canonists on the Continent were more lenient with regard to loans among merchants (see Bernard W. Dempsey, *Interest and Usury* [Washington, D.C., 1943], pp. 158 ff.; cf. also Erich Roll, *A History of Economic Thought* [rev. ed.; New York, 1942], p. 54).

[31] Georg Schanz, *Englische Handelspolitik gegen Ende des Mittelalters mit besonderer Berücksichtigung des Zeitalters der beiden ersten Tudors Heinrich VII. und Heinrich VIII.* (Leipzig, 1881), II, 620.

[32] Emile de Laveleye, "Origine historique de quelques arguments mono- et bimétalliques," *Jahrbücher für Nationalökonomie und Statistik*, XXXVIII (1882), 117.

[33] *Tudor Economic Documents*, III, 349.

[34] Gerard de Malynes, *The Maintenance of Free Trade* (London, 1622), pp. 32–33.

or in the Low Countries, the exchange remained at this level for a number of years.

The position of the balance of trade, either favorable or unfavorable to England, influenced the exchange rate in much the same way as changes in the mint par. Adjustments were made by a rise or fall of the exchange rates both in Antwerp and in London rather than by an expansion or a contraction of the gap between the two rates. In reality this expansion or contraction of the gap between the rate for time bills in one place and in the other place could be combined in many different ways with a rise or fall of the two rates or of the exchange in both places. For purposes of analysis, however, it is necessary to isolate each of the forces which influenced the exchange rates.

Let us suppose that the balance of trade was unfavorable to England. In such a case, imports being larger than exports, foreign balances tended to accumulate in London. There would be few takers and many deliverers in Lombard Street.[35] Consequently, the price of bills would fall, that is, the exchange would go down. In Antwerp, however, there would be more sellers than buyers of claims on London. But a seller of bills is a taker of money, and a buyer of bills is a deliverer of money. Consequently, in Antwerp, the number of takers was likely to exceed the number of deliverers. As a result, the exchange would fall in Antwerp, too.[36]

When the balance of trade was unfavorable to England, the exchange tended to fall both in Antwerp and in London.[37] The pound sterling would be rated below par in both places. For this reason the mercantilists said that "the English monies were undervalued in exchange."[38] If no equilibrium at a rate below par (and unfavorable "terms of trade" for England) stopped the fall of the exchange, it would drop below the export specie point. At this point it became profitable to ship specie from London to Antwerp. Such a condition apparently existed in the 1620's. The mercantilist writers of this period bitterly complain that the undervaluation of English monies in exchange causes their transportation abroad. Misselden is the first writer to diagnose the situation correctly and to attribute the drain of specie to an unfavorable balance of trade.[39]

Let us suppose that the balance of trade was favorable to England, instead of being unfavorable. In that case the excess of exports over imports tended to increase the volume of the balances standing to the credit of Englishmen in Antwerp.[40] Lombard Street would be

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[35] Thomas Mun, *England's Treasure by Forraign Trade* (reprinted from the ed. of 1664; Oxford, 1933), pp. 40, 48. Mun states that, if the Low Countries bring in more than England sells to them, there will be in London more deliverers than takers by exchange for Amsterdam.

[36] When, for whatever reason, the takers outnumbered the deliverers, the exchange usually rose in London but fell in Antwerp. On the other hand, when the deliverers outnumbered the takers, the exchange tended to fall in London but to rise in Antwerp. These are rules which apply to each market separately and are not intended to raise the question of causal relationships.

[37] The fall was likely to be greater in Antwerp, since the exchange there was always a few points below the London rate for usance bills.

[38] This expression is common in the writings of Malynes, Misselden, and Mun.

[39] Malynes denies the influence of the balance of trade and claims that the undervaluation of English monies is the "efficient" cause of their transportation. Mun, backing Misselden, states emphatically that "it is not the undervaluing of our money in exchange, but the overbalancing of our trade which carries away our treasure" (*op. cit.*, pp. 40–41).

[40] The phenomenon is described in the report of the commission of 1564. This report states that,

crowded with takers eager to sell their claims on Antwerp in order to get cash. With the demand for cash exceeding the supply, money was likely to be "scarce" in Lombard Street. Because of this scarcity, cash would be at a premium, and the deliverers would take advantage of these market conditions to drive up the exchange. In Antwerp, however, the demand for bills on London would be greater than their supply. The deliverers would outnumber the takers, with the result that the exchange tended to rise. When the balance of trade was favorable to England, the exchange was certain to rise both in London and abroad. The rise of the exchange could come to a standstill at a point above the mint par but below the specie point. If no equilibrium could be achieved at an intermediate level, the exchange would continue to rise until the import specie point was reached. At this point specie was likely to flow into England and to relieve "the scarcity of money" in Lombard Street.

The English mercantilists failed to perceive that the rise or fall of the exchange set corrective forces in motion. All other things being equal, a fall of the exchange tended to promote exports and to discourage imports by raising the price of imported commodities and by lowering the price of English commodities abroad. A rise of the exchange had the opposite effects. The mercantilists, or at least some of them, attached great importance to favorable "terms of trade."[41] Malynes, in particular, thought that the undervaluation of English monies in the exchange was bad, because it caused English commodities to sell "too cheap" and foreign commodities "too dear."[42] The trouble with Malynes and the other mercantilists was that they had no price theory and that they failed to realize that demand is a function of price.

The theory of exchange which has been developed at length in the preceding paragraphs can be restated as follows: In the period under consideration the rate of interest determined the spread between, let us say, the London and the Antwerp exchange rates for usance bills; but the level of both rates was determined by the mint par and the regulating action of the balance of trade. This theory requires only one qualification: shifts from one level to another (corresponding to fluctuations of the sight rate today) gave rise to windfall profits or losses due to exchange fluctuations.[43] One reason for the emergence of such profits (or losses) was that communications were slow and exchange fluctuations were less perfectly synchronized than they are today. Another reason was that conditions in the money market could change during the time which elapsed between the creation of a bill and its maturity. Most of the time there was a gross profit for the exchanger or deliverer, since the swings of the exchange were seldom powerful enough to offset the strong influence of the rate of interest. For this reason Dr. Thomas Wilson contended erroneously that the cards

when the balance of trade is favorable to England, "the overvalue of English wares shall from time to time fill our English merchants' purses at Antwerp," with the result "that they shall become great deliverers upon the Exchange there, which occasion will force the bankers to keep up the Exchange" (*Tudor Economic Documents*, III, 354).

[41] Viner, *op. cit.*, p. 35.

[42] *The Canker of England's Commonwealth*, pp. 35, 62; *The Maintenance of Free Trade*, p. 22; *The Center of the Circle of Commerce* (London, 1623), pp. 17, 44; cf. also Johnson, *op. cit.*, p. 51.

[43] I use the expression "shifts from one level to another" because the London and Antwerp rates for usance bills tended to rise or fall together, if the rate of interest did not interfere.

were stacked in favor of the banker. However, the latter could lose and sometimes did lose, if exchange fluctuations were violent enough to overrule the rate of interest. Misselden cites one instance in which the exchange rate rose faster in Hamburg than in London, because the Hanseatic currency was suddenly debased.[44] Presumably the matter was speedily adjusted, when news of the debasement reached London. In the meantime, however, bankers who had delivered money by exchange for Hamburg incurred heavy losses.

The theory formulated above may be called "the theory of interest in exchange," because the banker's gross profit was an amalgamate of various elements, including interest.[45] This theory makes it possible to disentangle those various elements and to isolate the interest factor. Today there is no need for such a theory, since the existence of an exchange rate for sight drafts and cable transfers *ipso facto* eliminates the interference of the rate of interest. Modern economists, therefore, do not have to worry about this additional complication and have been able to devote their attention exclusively to the transfer-of-funds aspects of the problem.

In dealing with early mercantilist thought, one should also be aware of the institutional differences between the period prior to 1650 and our own time. By 1600 bills of exchange had not yet become negotiable credit instruments. Furthermore, bills were nearly always foreign bills involving an exchange transaction. The *differentia loci* was regarded as an essential feature of the exchange contract. Bills of exchange were not discounted and still less rediscounted, since there were no central banks. Owing to the usury prohibition, interest had to be concealed and was included in the price at which bills were bought and sold. After 1650 the introduction of the doctrine of negotiability, the emergence of domestic bills, and the creation of a discount market for commercial paper were all instrumental in dissociating credit from exchange.

"Takers in London were usually merchant-adventurers and other English merchants who needed cash to pay for the cloth which they had bought from clothiers in Blackwell Hall. These takers expected to honor their bills from the proceeds of the cloth which they sold in the Low Countries. In view of the existing organization of the money market, only merchants who had connections abroad could take up money by exchange, because the taker had to be represented in other places by an agent, a partner, or a correspondent who would accept and honor his bills. If this representative did not have sufficient funds to meet maturities, he could always raise money by drawing on his principal. In any case a merchant who had no such connections was seriously handicapped. He was shut off from the money market, unless he could make special arrangements with a deliverer. The purpose of dry exchange was to make such arrangements possible. "Dry exchange" was merely a device by which a local loan was disguised under the form of an exchange transaction.[46]

Malynes in his *Lex mercatoria* gives a rather detailed description of dry exchange.[47] His account is fairly accurate,

[44] *Op. cit.*, p. 114.

[45] The banker's gross profit was made up of several items: interest, compensation for credit risk, brokerage, consular fees, mail charges, administrative expense, etc., and a residual net profit (or net loss).

[46] N. S. B. Gras, "Bill of Exchange," *Encyclopaedia of the Social Sciences* (New York, 1937), II, 540.

[47] (London, 1656 ed.), p. 253.

but it is intelligible only to readers who are already familiar with the business practices of the time. As dry exchange is not a simple matter, it is preferable to get firsthand information from business records rather than to go to secondhand sources. The ledger of the Bruges branch of the Medici banking-house for the year 1441 contains several accounts obviously relating to dry exchange between Bruges and Venice. One of the accounts in question is that of a Venetian named Antonio di Niccolò del Conte.[48]

The entries in Antonio del Conte's account refer to three different loan contracts. A first loan of 533 ducats was granted to Antonio del Conte by the Medici branch in Venice probably on or about March 15, 1441. As Antonio did not have correspondents in Flanders, he was told by the deliverers to draw on the Medici in Bruges and to make the bill also payable to the same. Consequently, the bill was so worded that the Medici of Bruges appeared at the same time as payee and as payor. Such a bill still involved the customary four parties, but two of them were fused in the same person. Bills of this sort were fairly common in the Middle Ages. They usually read "Pay to yourselves" (*Pagate a voi medesimi*) instead of "Pay to So-and-So."[49] The use of this formula frequently, but not always, indicated a transaction involving dry exchange. Bills thus payable "to yourselves" did not give rise to any money payments but were usually settled by a transfer in the books of the payee, who was also the payor. Generally he wrote the amount stated in the bill to the debit of the taker and to the credit of the deliverer or the lender.

The bill signed by Antonio del Conte was made out for 533 Venetian ducats at 51½ gr. per ducat. In the fifteenth century, exchange between Bruges and Venice was quoted in both places at so many groats per ducat of 24 *grossi*.[50] On May 13, 1441, when the bill apparently matured, the Medici bank of Bruges wrote the sum of £114 10*s*. gr., or the equivalent of 533 ducats at 51½ gr., to the debit of Antonio del Conte and to the credit of the Medici subsidiary in Venice. Antonio's account was also charged with 4*s*. 9*d*. gr. for commission and 9*d*. for consular fees.

Two days later, on May 15, 1441, the Medici of Bruges reversed this entry, debiting the Medici of Venice and crediting Antonio del Conte for £114 15*s*. 6*d*. gr. As a result, the latter's account was closed and balanced. At the same time the Medici of Bruges drew a bill of exchange on Antonio del Conte in favor of the Medici Company in Venice for 534½ ducats, or £144 15*s*. 6*d*. gr. at 51½ gr. per ducat (see Chart II). This bill was payable at usance or two months after date.

As the Medici of Bruges were both taker and deliverer, they furnished and received the value of the bill. It contained the unusual phrase "for the value received in ourselves" (It., *per la valuta ricevuta da noi medesimi;* Fr., *valeur en*

[48] Florence, State Archives, Mediceo avanti il Principato, No. 134, fragment of a ledger from the Bruges branch of the Medici banking-house. The account of Antonio del Conte is on fols. 230^{v}–31^{r}.

[49] See the description of dry exchange given by Bernardo Davanzati, "Notizia de' cambi," published in *Scrittori classici italiani di economia politica, parte antica*, II (Milan, 1804), 66. The text of the "Notizia" is also available in Davanzati, *Opere*, II (Florence, 1853), 425–36; cf. Raymond de Roover, "Money, Banking, and Credit in Medieval Bruges" (unpublished Ph.D. dissertation, Department of Economics, University of Chicago, 1943), p. 92, n. 67.

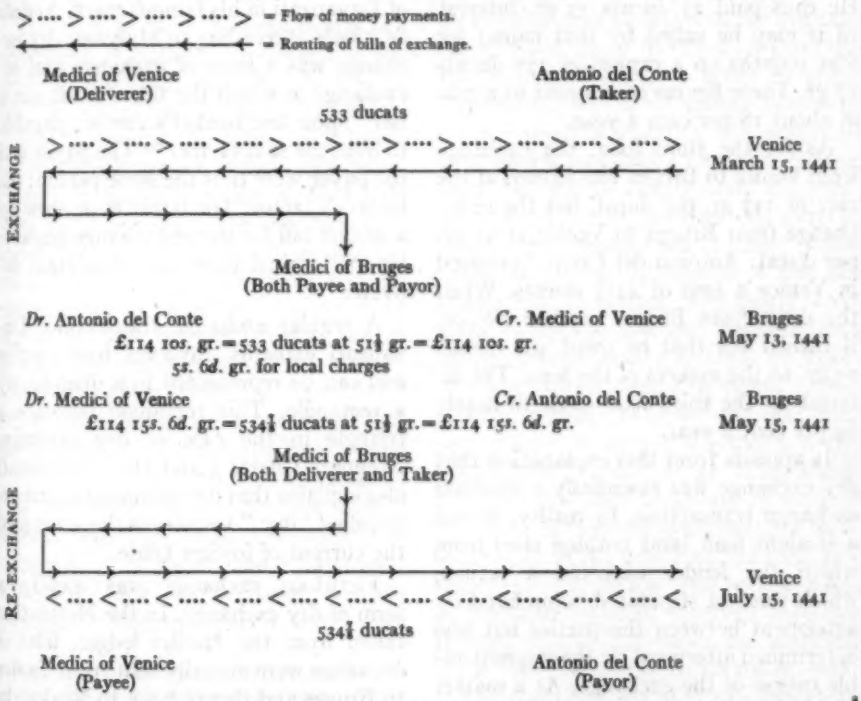
[50] This practice was still followed in the seventeenth century in quoting the exchange between Amsterdam or Antwerp and Venice (van Velden, *op. cit.*, pp. 4, 73).

nous-mêmes).[51] Another point which should be stressed is that Antonio del Conte, the payor, paid only 534⅞ ducats for the use of 533 ducats during a period of four months while the bills of exchange traveled back and forth between Venice and Bruges. The difference of 1⅞ ducats, moreover, represents charges for factorage and consular fees in Bruges. Antonio del Conte, consequently, paid no interest whatsoever on the money which he borrowed in Venice from the local branch of the Medici. The reason is that the 533 ducats were reduced to Flemish groats and these groats to ducats at the same rate of 51½ gr. per ducat. This was just a matter of chance. Normally, the ducat was rated higher in Venice than in Bruges for the same reason that the pound sterling, in the sixteenth century, was usually rated higher in London than in Antwerp.[52]

The second loan granted to Antonio del Conte by the Medici branch of Venice amounted to 377 ducats 17 gr. and

CHART II*

EXAMPLE OF DRY EXCHANGE BETWEEN BRUGES AND VENICE BASED ON A REAL CASE TAKEN FROM BUSINESS RECORDS


> .... > .... > .... > .... > = Flow of money payments.
= Routing of bills of exchange.
Medici of Venice (Deliverer)
Antonio del Conte (Taker)
533 ducats
EXCHANGE
Venice March 15, 1441
Medici of Bruges (Both Payee and Payor)
Dr. Antonio del Conte
Cr. Medici of Venice
Bruges May 13, 1441
£114 10s. gr. = 533 ducats at 51½ gr. = £114 10s. gr.
5s. 6d. gr. for local charges
Dr. Medici of Venice
Cr. Antonio del Conte
Bruges May 15, 1441
£114 15s. 6d. gr. = 534⅞ ducats at 51½ gr. = £114 15s. 6d. gr.
Medici of Bruges (Both Deliverer and Taker)
RE-EXCHANGE
Venice July 15, 1441
534⅞ ducats
Medici of Venice (Payee)
Antonio del Conte (Payor)

* Source: Florence, State Archives, Mediceo avanti il Principato, No. 134, fragment of the ledger of the Medici branch in Bruges for the year 1441.

[51] For an example of such a bill see Jacques du Puys, *L'Art des lettres de change* (Paris, 1693), p. 33.

[52] *Libro di mercatantie* (p. 8) states that the exchange rate varied between 46 and 54 gr. per ducat in Bruges and between 47 and 54 gr. in Venice.

was contracted at the rate of 54½ gr. per ducat, which made £85 14*s.* 5*d.* gr. in Bruges. After adding consular fees and commission, the re-exchange was computed at the prevailing rate of 51½ groats on the basis of £86 2*s.* gr. These figures give a total of 401¼ ducats. In this case Antonio del Conte borrowed 377 ducats 17 gr. and had to repay 401 ducats 6 gr. He thus paid 23 ducats 13 gr. interest (if it may be called by that name) for four months on a capital of 377 ducats 17 gr. These figures correspond to a rate of about 18 per cent a year.

As for the third loan, the exchange from Venice to Bruges was figured at the rate of 53¼ gr. per ducat, but the re-exchange from Bruges to Venice at 51 gr. per ducat. Antonio del Conte borrowed in Venice a sum of 441¼ ducats. When the draft from Bruges reached Venice, it turned out that he owed 461 ducats 19 gr. to the makers of the loan. The interest on the third loan came to nearly 14 per cent a year.

It appears from this explanation that dry exchange was essentially a spurious exchange transaction. In reality, it was a straight loan (and nothing else) from which the lender expected a return, which was not stipulated beforehand by agreement between the parties but was determined afterward by the unpredictable course of the exchange. As a matter of fact, this return remained unknown until the bill drawn on the borrower by the lender's correspondent abroad arrived at destination. Dry exchange, therefore, was speculative, since neither the lender nor the borrower could foresee how the exchange rate would swing. As we have seen from Antonio del Conte's first loan, it could happen that the lender received no return, when exchange and re-exchange were computed at the same rate. But if they were computed at different rates, his profit (or loss) increased or decreased with the discrepancy between the two rates. There would be a loss only if they were not in a position of equilibrium.

The example of dry exchange which has been given fits the description of Malynes in his *Lex mercatoria* and that of Davanzati in his famous tract, *Notizia de' cambi*. According to Malynes, dry exchange was a form of exchange and re-exchange in which the taker made out a bill "upon the banker's factor, payable to him, the said factor."[53] The payor and the payee were thus the same person: the banker's factor. The latter then drew up a second bill for the re-exchange payable by the original taker to the original deliverer.

A regular exchange transaction, Davanzati explains, involves four parties and can be represented in a diagram by a rectangle. This rectangle becomes a triangle in the case of dry exchange (compare Charts I and II).[54] Davanzati also explains that dry exchange is properly called "dry," because it does not feed the current of foreign trade.

Fictitious exchange was merely a form of dry exchange. In the illustration taken from the Medici ledger, bills of exchange were actually sent from Venice to Bruges and thence back to Venice. In the case of fictitious exchange the contracting parties did not even take the trouble to send bills abroad. Bills were simply made out *pro forma*, often under

[53] (1656 ed.), p. 253. Another description of dry exchange, very similar to that of Malynes, is given in a sixteenth-century French manuscript published by Albert Chamberland and Henri Hauser, "La Banque et les changes au temps de Henri II," *Revue historique*, CLX (1929), 285.

[54] Davanzati, *op. cit.*, pp. 66 f.

fictitious names.[55] Interest, however, was still computed on the basis of the exchange rates reported by business connections abroad. It was a merchant custom to end all business letters to foreign correspondents with information concerning the course of the exchange with different places. Such information, therefore, was easily available.

It is true, as R. H. Tawney points out, that there is nothing mysterious about dry exchange; but to call it "a finance bill" is not giving an exact definition. Dry exchange may be defined as a transaction involving exchange and re-exchange in which no money payments were made abroad.[56] The merchants resorted to this complicated device because bills were not negotiable and because contracts involving the payment of interest were not enforcible at law. It is true that an English statute of 1571 revived an older statute of Henry VIII which allowed the taking of interest, but the rate was limited to 10 per cent.[57] The current rate, however, often exceeded this limit—especially when the money market was tight—and rose sometimes as high as 15 or 20 per cent.[58] Moreover, it is likely that dry exchange was less common in England than in those Continental countries in which interest was still forbidden by canon, statutory, or customary law. It is obvious that dry exchange loses its *raison d'être* from the moment that interest is permitted.

Despite all the evidence to the contrary, many writers denied that interest was included in exchange profits, especially on the Continent where the Counter Reformation had revived the disputations on the usury question. A good example in this respect is given by some statements of Peri, an Italian author of the seventeenth century, who seems to have been a spokesman for the merchant class. Peri boldly asserts that "the profits from exchange dealings originate in price differences and not in time" (*nasce l'utile dal prezzo del cambio, e non dal tempo*). He concedes reluctantly that some waiting is involved because bills are payable at usance and not on sight. But Peri passes over this detail rather quickly in order to stress the fact that profits may be turned into losses if the re-exchange is made at an unfavorable rate.[59] Peri's statements are typical of the views held by the merchants or their spokesmen. They could not and did not admit that the banker who bought a bill of exchange usually received interest. Instead, they laid stress on the possibility of loss and the uncertainty of gain.

The canonists accepted this theory at face value. They granted that the exchange contract was not a *mutuum* or a loan of money for certain gain and hence did not fall under the scope of the usury prohibition. According to them, the exchange contract was either a permutation of monies (*permutatio praesentis pecuniae cum absenti*) or a contract of

[55] Wilhelm Endemann, *Studien in der romanisch-canonistischen Wirthschafts-und Rechtslehre* (Berlin, 1874), I, 299–300.

[56] By "money payments" I mean payments either in coin or in bank money. Bills of exchange in certain cities, Venice, for example, were always payable in bank.

[57] 13 Elizabeth, c. 8. This statute repealed 5 and 6 Edward VI, c. 20, by which the taking of interest was absolutely forbidden, and revived 37 Henry VIII, c. 9, which limited the interest to 10 per cent. Before the enactment of this statute all contracts involving interest were unlawful.

[58] Malynes, *The Canker of England's Commonwealth*, p. 120.

[59] Giovanni Domenico Peri, *Il Negotiante* (Venice, 1707), Part I, pp. 54, 57. The first edition is dated 1638.

purchase and sale (*emptio venditio*).[60] They failed to see that dealings in time or usance bills necessarily involved the extension of credit. The canonists did not realize the dual nature of merchants' exchange.[61] They overlooked the fact that it was at the same time a credit and an exchange transaction and that the gross profit or loss of the exchanger included interest. Nevertheless, the Continental canonists frowned upon dry exchange or fictitious exchange, because these practices could hardly be regarded as bona fide exchange transactions.

In contrast to the Continental schoolmen, the English writers—late canonists and early mercantilists alike—recognized the presence of the time element in exchange dealings. Armstrong and Wilson were violent in denouncing the bankers as usurers. Malynes accuses them of plotting against the commonwealth of England by depressing the exchange and keeping the interest rate high.[62] Mun makes the matter-of-fact statement that the exchanges are not contracted "at the equal value of the monies according to their respective weights and fineness; first, because he that delivers his money does respect the venture of the debt and the time of forbearance."[63] Mun goes on to explain that this is not the only reason why the exchange rates deviate from par. However, he is not the first to bring out these facts. They are revealed as early as 1564 in a most remarkable document: the report of the royal commission on the exchanges which was most probably inspired by Sir Thomas Gresham, although he is not listed among the members of the committee.

The English mercantilists made some valuable observations. They were unfortunately unable to integrate them in a comprehensive theory which would have explained how the exchange rates were differently affected by variations in the rate of interest, by changes in the mint par, or by shifts in the position of the balance of trade.

WELLS COLLEGE

[60] The canonists could not agree on the nature of the exchange contract but generally recognized that it was not a *mutuum* (see Endemann, *op. cit.*, I, 303–11). In Siena the exchange contract was considered as an *emptio venditio* as far back as the thirteenth century (see Mario Chiaudano, "Note sul contratto di cambio in Siena nella prima metà del secolo XIII," *Studi in memoria di Aldo Albertini* [Padua, 1938], III, 55–72). Du Puys, whose book was published in 1693, classified the exchange contract as a kind of contract of purchase and sale (*une espèce d'achapt et vente*) (*op. cit.*, p. 15).

[61] Jean Lescure, "Esquisse de l'évolution du change et des théories relatives au change," *Revue d'histoire des doctrines économiques et sociales*, III (1910), 65 and 69.

[62] Malynes considered only the credit aspect of the foreign-exchange problem and disregarded the transfer-of-funds aspect. He was mainly interested in two things: favorable "terms of trade" (not a favorable balance of trade) and a low rate of interest. The bankers, in his opinion, were guilty on both counts.

[63] *Op. cit.*, p. 39.

A DIMENSIONAL NATIONAL ECONOMY: A REPLY

DAVID ATKINS

IN HIS review of my *A Dimensional National Economy*, which appears in the December, 1943, issue of the *Journal* (pp. 561–62), Mr. R. W. Burgess charges me with statements directly opposite to those I make and with views which I do not hold.

Mr. Burgess states that I propose that "the banks, with government backing, should loan the value of his land to any landowner." This, to one who chances to read the review only, gives a completely false impression of my proposal and, if true, would justify his conclusion that the book is without value. This is not true. What I specifically propose, and repeatedly emphasize in showing the essential difference between interest and discount, is that our banks (which, in the main, do not "loan money" but underwrite credit) should borrow money from the landowner who has obtained it from the government by pledging, to insure redemption, first liens on area, valued solely in terms of population-density (*A Dimensional National Economy*, pp. 96-97), since our final determinant of the use-value of wealth is human estimation, made evident by the selective shifting of population to points of optimum utility to the individual (pp. 73–74, 92). Such a prime money, because, unlike gold, it is proportionally related to total national wealth, would then serve as a logical marginal reserve to be held by banks, thus automatically limiting the volume of their underwriting of the value of nondimensional wealth and acting as a bar to credit inflation. My whole justification for employing an area-density monetary unit is that it can be backed by a nondiscretionary, dimensional pledge, thus making the "management" of our economic unit as unnecessary as it is absurd. This is further emphasized on pages 4, 68–69, 86, 98, 123, and 203–4.

Mr. Burgess states that I "refuse to admit that economics is a social science, the raw material of which is the divergent estimates made by different individuals, at different times, and under different circumstances, of the value to them of physically identical goods." The fact of the matter is that Mr. Burgess refuses to admit that it is the "unity" of these diversities which constitutes the basis of my proposed unit. I show that our total national wealth, in terms of its use-value to man, is the sum of all our diverse notions as to the desiredness of goods and services and that it is these individual idiosyncrasies which constitute the countless "differences of potential" which set effective human effort in motion (pp. 43–44, 91, 212–13). I show, also, that it is these differences of opinion as to the individual use-values of wealth which, in an equal exchange, result in profit to each participant (pp. 29, 94, 145, 176). To emphasize all this, I suggest (pp. vii, 4, 61) that the term "humanics" might be a better one than "economics." I do not "refuse to admit" the nature of our raw material; I assert it repeatedly. (I refer to pp. 10, 23, 45, 53, 69, 138, 142, 150, 201.) The reason for this insistence is the necessity of convincing the reader that man must be included in any valid common denominator. It is bewildering to be chided for refusing to admit my chief premise, and I find it difficult not to resent an attempt to crowd me to the wrong side of the road for the purpose of scolding me for being there.

Mr. Burgess states that, while I define our primary economic value as effective human effort, I do "not define 'effective' in any precise or uniform way." For the general reader, I define effective effort as "man's power over Nature" (p. 7); for the physicist, as "resistance overcome" (p. 28); for the economist, as "effective demand" (which very few econo-

mists feel it necessary to define more closely than the term itself implies) (pp. 14, 16, 58). It seems fairly obvious that demand, to be effective, must represent effective effort, whether made manifest in the form of desired services or desired goods. I not only define effective effort uniformly, as above; but for the sake of precision I divorce it completely from the vague term "labor hour" by showing that, in any complete cross-section of our national, circulating, economic system a definite proportion of total effective effort may be measured in terms of an *inescapable* and *specific* resistance which, in turn, can be expressed in terms of our only comprehensive economic dimensions—area, population, and time (pp. 37–39, 72–74, 105). This is the resistance to trespass which economics calls "ground rent." Moreover, in anticipation of this type of hasty, intolerant criticism, I went to the trouble of adding to my definition of our prime economic value as effective effort, the clause "or its material equivalent," for the sake of those who do not know that "energy" may be expressed in terms of "work" (pp. 33–35).

Mr. Burgess states that I give "no indication . . . . of how to determine, before the unit of value is defined, that a given 600 square feet is 'average.' " I am employing integers; I do not make use of "qualities" until these are ratified by man's estimation. I indicate at the outset (p. vii) exactly how I use this term "average" when I refer to the "average man." I state, also (pp. 15, 67–69), that where I use the term "land" I am referring to "area"only, or what Gide calls "room." If units of sufficient size are taken, the *metrical* occupancy-value of any particular area is obviously determined, in a free country, where men are not denied the right to move, by the number of persons who desire to occupy this area, and make their desire effective by the exertion of effort. My unit is defined, or the definition is emphasized, on pages 4, 12, 23, 24, 28, 52, 55, 68–69, and 72–74. The validity of this unit rests upon the fact that it is a least common denominator of all the factors of wealth, including man and his diverse ideas of desiredness (pp. 92, 125–26, 189, 192–95, 217). I would point out that at the time (1922) to which the statistics set forth in the Appendix apply, and which were referred to in the general text, the average population-density of the total groups of states included was approximately 0.05 per acre, and the average "land value" (governed chiefly by the "nonproductive" urban areas) was 38 per cent of the average wealth-density per acre. Is it necessary, in view of the dimensions I employ, to state in greater detail to an intelligent reader that any land situated within a suitable area-unit which has this particular population-density is "average"? I do not think so, but I may have overrated the intelligence of some of my readers or underrated their prejudices. Given the fact that, if units of area of sufficient size are taken, there is a logical and demonstrable relation between the wealth-density and population-density of area, and an equally logical and demonstrable relation between the wealth-density and occupancy-value of area, it should not be difficult to grasp the further fact that the value of some particular subdivision of the whole, expressed in terms of population and square feet, will be the *mathematical* equivalent of a so-called "gold" dollar, at any moment we elect to convert. That this, at one point in the plunging and soaring of this so-called "gold" dollar, chanced to be 600 square feet within an area-unit of average density is not important. What was important was to give to the general reader a picture of the size of the tangible land-holding of average density (or its *mathematical* equivalent in terms of area-density) that would have to be pledged as a possible forfeit to insure the redemption of an *area-density* dollar. This is why I employed the term "average land" on page 84, following (not preceding, as Mr. Burgess implies) my definitions and my references to the dimensions and data employed. After stating that I give no indication how I determine that an area of 600 square feet is "average," Mr. Burgess proceeds to capitalize his mis-

statement. He adds: "This use of area .... is *the* [the italics are mine] justification for the word 'dimensional' in the title." His implication is not fair because it is less than a half-truth. The dimensions of *time* and *man*, and the compound dimension of occupancy-value of area per unit of time, are coimportant, as I show on page 27, since the value I am measuring is human energy.

Mr. Burgess states that my use of nation-wide and state-wide statistics (i.e., those of the Bureau of the Census and those of Messrs. King and Friday, which I employ) are "not well adapted to assist in the task of devising a practicable unit." This, without any reference to an alternative, is an extraordinary statement. I employ these comprehensive statistics, first, to demonstrate the fundamental relation between wealth-density and occupancy-value, and between occupancy-value and population-density, in a region where men are free to move toward the use-values of wealth to them as individuals; second, to arrive at a unit which is representative of the whole, and not merely of some selected "bill of goods" which excludes the actual and potential services of man and his various estimates of the economic values of many accommodations which never appear in a price list. What valid base of reference, other than the whole, or the sum of all the parts, can Mr. Burgess employ, as a statistician, or can I employ as an engineer, by which to arrive at the relative value of any of the parts? He takes pains to imply that my knowledge (if any) of the laws of physical measurement and of "the mathematics of investment and statistics" is deplorably inferior to his own. Yet, even I, in devising the "practicable unit" for corporation use, which we call a "share," could not be persuaded to regard the total assets of the corporation, and the total number of shares to be issued, as inapplicable on the ground that they are too comprehensive.

Mr. Burgess upbraids me for "selecting" from the writings of certain distinguished economists a number of quotations which support specific points of my premises, but of ignoring their "main lines of thought." Of course I select, and I emphasize this myself on page 168. Mr. Burgess overlooks the fact that these men accepted our present, archaic, so-called "unit," and devoted their attention to the study of the use of this "unit," giving the name of "laws" to the inevitable recurring distortions to which it gives rise and searching for possible ameliorations. As Gide puts it (after pointing out that labor should be the measure of economic value, if we had a dynamometer), we must be content with gold and silver and then try to rectify the errors to which they give rise. This is his "main line of thought," but it does not invalidate his diagnosis. It is not my main line of thought, for I show that we have available a dynamometer. Nevertheless, I agree with Gide's diagnosis and with those of many others whom I cite. In referring to the writings of Petty, Carey, Jevons, Pareto, Gide, Marshall, Patten, and Pigou, the statements I quote are explicit and self-supporting.

Finally, Mr. Burgess states that I make "assertions without demonstration." I am not aware of this, but, keeping well within the bounds of courtesy which he allows himself, I feel entitled to say, without incurring a repetition of his reproach that I am "vague" or "poetic," that he makes assertions without foundation.

SAN FRANCISCO

A REJOINDER

ROBERT W. BURGESS

WHILE it does not seem advisable to discuss at length Mr. Atkins' reply to my review, some answer is necessary to the second paragraph of his reply, which objects to my attempt to summarize his proposal that banks obtain their "marginal reserves" by borrowing from landowners the "prime money" which has been issued to them by the Treasury on the security of their land. Since Mr. Atkins states that the medium of exchange in his system is to be currency, or negotiable credit, provided by the banks, I presumed that in practice landowners would usually, or at least often, get such currency or negotiable credit in return for the prime money which they would have received and which the banks would need. It seems to me a reasonable conclusion that, in effect, the proposal would lead to a bank's loaning the value of his land to any landowner who wished to make that arrangement. I should perhaps have indicated that my statement of the proposal included some inferences as to how it would probably work; but Mr. Atkins' own exposition of his proposals is so scattered and vague and so entangled with unusual notions, such as that of the "essential difference" between interest and discount, that it is difficult to make any significant statement about the proposals without going beyond Mr. Atkins' own words.

In commenting on Mr. Atkins' third paragraph, it is agreed that finding unity amid diversity is one of the goals of scientific thought. Such unity, however, must not merely be assumed. Individual differences must first be measured by use of appropriate units, and the resulting material analyzed, compared, and summarized. We all recognize, I hope, the importance of man and his estimations in economic problems. We must also recognize that different men have different ideas of value and that these ideas vary from time to time, apart from variations in the physical characteristics of the thing valued. It follows that any system for determining values must include a procedure for taking individual differences into account, which apparently Mr. Atkins is not willing to do.

No further comment on the reply is called for, since the review, the above comments, and careful attention to Mr. Atkins' reply will enable the reader to reach sound conclusions as to the validity of his discussion.

NEW YORK CITY

BOOK REVIEWS

Trade Regulations & Commercial Policy of the United Kingdom. By the RESEARCH STAFF OF THE NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH. Cambridge: At the University Press; New York: Macmillan Co., 1943. Pp. x+275. $3.75.

For the serious student of recent commercial policy this is an unusually valuable book. It presents in condensed, readily accessible form the story of England's transition, in the quarter-century 1913–38, from free trade to a comprehensive uncompromising protectionism. Initial steps toward a restrictionist policy were taken during and after World War I, but the final commitments, the Import Duties Act (1931) and the Ottawa Agreements (1932), were brought about by the economic and financial disasters of 1930 and 1931. Protection is now afforded not only to manufacturing but to agriculture, fisheries, and forestry by tariffs, subsidies, clearing agreements, and a wide variety of "incidental" measures.

From 1931 to 1938 the new tariff was refined and reinforced. In this process the English borrowed, and in many cases improved upon, tariff policies and practices developed elsewhere. They set up an Import Duties Advisory Committee, somewhat like the United States Tariff Commission; they introduced licensing of imports and quota systems on the Continental model. In England, because of that country's dependence on export and import trade, domestic and foreign economic policies are inextricable. Hence, a large share of the book is concerned with "non-tariff protection" (England's New Deal), which includes agricultural subsidies and marketing schemes, aid to industry through interest and loan guaranties, export subsidies, participation in cartel arrangements, etc.

Free-trade England necessarily practiced equality of treatment; but, as soon as she began to restrict imports, discriminations appeared. Efforts to expand export trade through bilateral commercial agreements (described in chap. x) resulted in abandonment of a passive policy of equality of treatment. In accordance with British tradition, the most-favored-nation principle was not denounced, nor was it violated in the letter; but the threat of violation was used as a bargaining weapon to secure preferred treatment for English coal and other exports. Thus, England forced other nations to adopt a policy of discrimination while keeping her own skirts clear.

The picture of England's new protectionism is rounded out in two concluding chapters dealing with practices affording incidental protection, which the author defines as "measures and regulations which have the effect of protecting industry or interfering with foreign trade although they are not imposed with that object in view." For example, the introduction of new protective duties, particularly those on an ad valorem basis, have multiplied the number of documents and other formalities required from importers. Thus the cost of importing is increased and additional protection afforded to competitive domestic goods. Public-health laws, although not used deliberately as a means of indirect protection, have sometimes had that result. Public bodies in England, when placing contracts, are not required by law, as in this country, to favor domestic suppliers. A "buy-British" policy is, nevertheless, followed as a matter of custom. Empire countries have been favored in placing contracts; and discrimination has been practiced against countries with which England did not, at the moment, have friendly relations.

In general, the authors have been concerned principally with telling what the laws and regulations are rather than with discussing their effects. Their occasional generalizations on the latter subject are briefly stated without extensive argument.

The skilful arrangement of subject matter increases the usefulness of the book for reference purposes. Texts of tariff laws and regulations, and commercial agreements, are supplied in appendixes. There is no bibliography, nor any references to earlier, but less detailed, studies of British policy.

PERCY W. BIDWELL

Council on Foreign Relations
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Quantitative Trade Controls: Their Causes and Nature. By ECONOMIC, FINANCIAL AND TRANSIT DEPARTMENT, LEAGUE OF NATIONS. Geneva (New York: Columbia University Press), 1943. Pp. 45. $0.50.

This pamphlet is one of the series of studies on international commercial policy being published currently by the League of Nations. As such, its function is to discuss the special characteristics of quantitative trade controls that have made them so attractive to governments in the last fifteen years and that differentiate their effects from those of tariffs. The pamphlet satisfies this requirement excellently. It is extraordinary how complete a history and analysis of quotas and licensing systems have been compressed into forty-five pages; in this respect the pamphlet should be a model for those trying to bring together the main currents of professional thought on postwar problems. The first three chapters define quantitative trade controls and summarize the history of their use in the two decades after the first World War. Then follow three analytical chapters with self-explanatory titles: "Differences in the Operation of Tariffs and Quotas," "Reasons for the Adoption of Quantitative Trade Restrictions," and "Reasons for the Persistence of Quantitative Restrictions in the 'Thirties.'" The final chapter of conclusions concerns chiefly the conditions under which quotas might be removed or relaxed after the war. Some consideration is also given to the possibility of modifying quantitative controls in order to eliminate some of their worst features, but it is made clear that not much can be expected of such adjustments.

There is nothing particularly new in the pamphlet. Rather, it is a very good statement of the main elements of "liberal economic thought" about quotas. There is, therefore, no need to summarize the pamphlet's argument in a review for this *Journal*. A few scattered points may bear repeating. Both strong- and weak-currency countries resorted to quotas, the latter to protect their currencies, the former to check "exchange dumping." Quotas introduce rigidities into balances of payments that perpetuate and aggravate disequilibrium by making adjustment difficult. One of the serious obstacles to the removal of a quota system is the growth of private interests in its perpetuation: not only the protected manufacturers who prefer the certainty of a quota and the price advantage it gives them compared to a tariff but also importers who are able to take as profits the differential between the domestic price and the landed price of imports. Such profit-taking can be prevented, to a considerable degree, by a tax on import licenses roughly equaling the excess profit or by the allocation of shares in the quota to foreign exporters rather than domestic importers. The "stability" sought by a quota regime is a false stability in a world where needs, desires, and the personal ability to satisfy them are constantly changing.

The pamphlet wisely makes no attempt to elaborate procedures for removing quantitative trade controls in the future. The sensible conclusion is that quotas and the like will certainly be used if countries follow restrictive and autarkic policies, just because the direct controls are more effective in carrying out such policies than are tariffs. The problem therefore shifts to the means of attaining an international economy where the pressures for protectionism will be at a minimum and then taking international action to apply liberal principles to the solution of current problems. For these matters the readers of this pamphlet are referred to other studies published by the League.

The "quantitative trade controls" are discussed entirely in terms of governmentally imposed controls. Chapters i and ii mention the quotas imposed by cartels, but then nothing more is said of the matter. It would be interesting to have the analysis of the pamphlet's main chapters applied to cartel controls. Studies of postwar problems suffer from the lack of a first-class treatment of cartel questions and their bearing on governmental action. No program of commercial policy will be satisfactory which ignores the fact that, where cartels exist, private decisions can negate governmental action removing trade barriers. The elimination of official quotas and licensing systems will not affect trade much if they are replaced by identical private ones.

By reading the second paragraph of Alexander Loveday's Preface one can find out that this pamphlet was written by Gottfried Haberler, of Harvard University, and Martin Hill, of the League's Economic, Financial and Transit Department—information that belongs on the title-page. The authors deserve the credit for their excellent delineation and analysis of an important subject.

WILLIAM DIEBOLD, JR.
Palisades, New York

World Minerals and World Peace. By C. K. Leith, J. W. Furness, and Cleona Lewis. Washington: Brookings Institution, 1943. Pp. xii+253. $2.50.

The role of minerals in the postwar world looms large as the conflict enters its critical stages. To provide an answer to many of the everyday problems of mineral distribution and control, and to correct many current fallacious notions concerning minerals, the authors of *World Minerals and World Peace* have co-operated to produce a book which contains not only a wealth of pertinent data but also clear-cut analyses of the attempts which have been made to solve the major problems which grow out of the unequal distribution and control of the mineral wealth of the world. The volume will be of interest to specialists as a reference but should find its greatest audience among laymen who are interested in the problems which face all who are striving to develop a real basis for world peace. The materials of the book are so selected and so organized that no special background either in the earth sciences or in economics is necessary for a full appreciation of the problems discussed.

The volume is divided into three sections. The first, "Physical and Commercial Trends," is primarily factual and descriptive. It is concerned with analyses of trends in mineral production in years past and the mineral production of the nations involved in the present conflict. The failure of attempts of various nations to attain self-sufficiency is discussed at some length. Although the pattern of mineral production has changed and will continue to change, there is little to indicate that future attempts to eliminate national interdependence will be more successful than those of the past.

Part II takes up "Recent Trends in Political and Economic Control." It offers simple analyses of various control systems which have been applied to minerals, and it chiefly considers cartels, monopolies, tariffs, and quotas. Specific cases of attempts to control various important minerals are cited and evaluated. Parts I and II furnish the background for the third part, which is entitled "The Future." Herein are considered certain specific features of past control systems and national interdependence is emphasized. It becomes apparent that control measures can be effective only if they are drastic and that force is a necessary adjunct to success. The part that force must play and the type of force which can be most effective are considered. The solution of mineral problems must form an integral part of any larger plan of world co-operation if world peace is to be attained.

Much of the factual material concerning minerals is summarized in tables inserted throughout the text and in compilations which form the Appendix. There are many footnotes, which provide an adequate list of references for those who wish to follow certain aspects of the study further. Trade maps included in the chapter on "Interdependence of Nations" prove particularly valuable in the analysis of the flow of minerals.

World Minerals and World Peace can be recommended highly as one of the most lucid books in its field. It is authoritative and instructive. If given a sufficiently extensive distribution, it can contribute materially to establishment of a basis for solution of some of the vexing problems which have arisen in the fight to attain and preserve world peace.

Everett Claire Olson
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The Future Economic Policy of the United States. By William Adams Brown, Jr. Boston: World Peace Foundation, 1943. Pp. 101. $0.50.

The World Peace Foundation is performing a useful service in publishing small and cheap but well-bound volumes by reputable scholars on the leading questions of the postwar settlement. The volume under review is an excellent brief survey of the economic choices likely to confront the United States. Brown has wisely preferred to ask questions and pose alternatives rather than to lay down dogmatic theses. Indeed, one of his major points is that the determination of economic policy must involve choices—and in most cases a choice between less or more of a desired condition at the cost of sacrificing some other condition little less desired. He holds firm against the temptation of presenting "a Utopia under the guise of a prediction" and stresses always the "opportunity costs" to be paid for a desired end.

His little book falls into four parts. The first is devoted to pointing out the contradictory objectives that are so often combined in public statements—contradictions in domestic policy and between domestic and foreign policy.

In the second part attention is paid to what

A. G. B. Fisher, in a too neglected book, has called "the clash of progress and security." He makes a telling tabulation of the breaches already made in the free-enterprise system, while maintaining the long-run values of that system. The reconciliation, he suggests, lies in an effort to extend short-run security to individuals rather than to occupations.

The third section deals with foreign economic policy. One question, perhaps not sufficiently stressed, stands out in this analysis—the question whether Americans can "emancipate themselves from the fear of imports."

Finally, Brown turns to the requirements of a consistent economic policy. Citing various statistics of impoverishment in Europe, he makes the case for transitional controls and short-run national sacrifices in order to secure the kind of world in which the American economic system may survive.

This is a useful book, worth reading and worth pondering. Much has been written more pretentiously without containing the hard thinking and wise presentation that the author has managed to get into these few pages.

J. B. CONDLIFFE

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The New Philosophy of Public Debt. By HAROLD G. MOULTON. Washington: Brookings Institution, 1943. Pp. vi+93. $1.00.

Moulton begins by contrasting the "traditional" view with the "new philosophy" of public debt. According to him, all those who think that the budget should be balanced, once full employment is reached, are "traditionalists" (see p. 3). This view, which is shared by the author, is attributed also to the President, the Treasury, and the Board of Governors of the Federal Reserve System. Those who believe that "a rising debt has no adverse consequences and that without a constantly increasing debt we cannot hope to have full employment and prosperity" (p. 3) are "new philosophers"—a view which is held by the National Planning Board, Professor Hansen, and others.

This dividing line between traditionalists and new philosophers, as drawn by Moulton, is unfortunate. First, there is no responsible economist who thinks that a rising debt has, under *no circumstances*, adverse consequences. The danger of inflation which results from a rising debt, once full employment is reached, and the friction caused by the high taxes necessary to pay the interest on the debt have always been emphasized, particularly by Hansen (whose position is not adequately described by Moulton). Nor can we divide people into these two groups on the basis of whether or not they believe that a continuously rising debt is necessary to maintain full employment, for this difference of opinion has nothing to do with the philosophy which a person has with regard to the public debt. "Traditionalists," as well as "new philosophers," may be pessimistic about the adequacy of private investment. But the former will complain about all sorts of undesirable consequences of reaching full employment at the expense of a rising debt, whereas the latter will tend to minimize these consequences.

Moulton's own position is that an increase in public debt is possible without endangering "financial stability," provided (1) that the proceeds are invested "productively" (i.e., in such a way that the productive enterprise brings a yield which covers both principal and interest on the investment) and (2) that taxpaying capacity is increasing as a result of private business expansion. I assume that the first condition does not imply that Moulton *advocates* investments of the type which "pay," since this would mean that the state would have to enter the field in which we can expect private investment to function. It certainly cannot be Moulton's intention to deprive private enterprise of its investment opportunities. It must also be pointed out that "productive" investments by the state do *not* guarantee "financial stability," in the sense of a stable price-level. Inflationary tendencies may develop even if all government investments are profitable (in the narrow sense of the word), as evidenced by the rise in the price-level brought about by private investments in a boom. The second condition for a nondangerous rise in the debt, viz., that the taxpaying capacity shall be increasing as a result of private business expansion, surely does not allow us to conclude that it would be a wise policy actually to increase the debt in these circumstances. On the contrary, if private business provides full employment, the public debt should be reduced and not increased.

Moulton's arguments are not always well taken. For example, Hansen had maintained that the consumption function is difficult to change even by taxation, as can be seen from the fact that in the late twenties, as well as in

the late thirties, 88 per cent of the national income was consumed in spite of the change in the taxes which had taken place in the meantime. Moulton objects to these statistics. He illustrates his point by an example:

> If we had a national income of 100 billions with 88 billions of consumption and no taxes, the amount available for private investment would be 12 billions. If later we had a national income of 100 billions with 88 billions of consumption and 12 billions of direct taxes, there would be *no* money available for private investment. Yet the ratio of consumption to total national income would still be 88 percent.

Are the 12 billion taxes supposed to be locked up? If they are spent and consumed by recipients, surely consumption goes up to 100 billions and the ratio of consumption to national income does not stay at 88 per cent but rises to 100 per cent.

Or, again, Moulton argues that the lack of investment opportunities is a myth. But at the same time he maintains that there were excess money savings, not only in the thirties but even in the twenties, and that "we might again reach a situation in which the volume of savings would be in excess of private investment outlets."

As "lack or abundance of investment opportunities" is a relative term—lack or abundance in relation to savings seeking investment—it seems impossible that abundance of investment opportunities can coexist with excess savings unless we define "investment opportunities" in a special way. If we want to make abundance of investment opportunities and excess savings compatible, we must argue along the following lines:

Theories of interest so widely divergent as those of Cassel, Böhm-Bawerk, and Knight have one point in common: they assume, even in the absence of new technical inventions, practically unlimited investment opportunities, which at the existing interest rate are not profitable but will become so if the interest rate falls. This reviewer still believes that these authors are fundamentally right. Experience, however, seems to contradict their theory. The reason is not difficult to find. They argue on the assumption that uncertainty about the future is absent or at least negligible. If an entrepreneur (as in the last decade) cannot plan his investments on the assumption that the existing conditions (tax laws, foreign exchange rates, wage rates, etc.) on which he bases his plans at the planning date will not fundamentally change in the near future, his plans will have such a wide margin of error concerning their probable profitability that a fall in the interest rate by 2 or 3 per cent will not tip the scale in favor of investments that were not considered profitable before. The lack of investment opportunities which seems to exist stems from uncertainty which is partly the result of a vacillating economic policy pursued by governments. In the absence of such uncertainty, investment opportunities would be plentiful. The really interesting question in this connection is to what extent the rising public debt is one of the factors contributing to a decline of private investment. To say that public investment fills the "gap" left by private investment is certainly too simple a statement. Public investment no doubt helps to widen the gap which it is supposed to fill. This may be due to the feeling of uncertainty created in the businessman's mind or to the high taxes which eventually will have to be raised for the purpose of paying the interest on the debt. A thorough analysis of the relationship between private and public investment is an urgent need.

F. A. Lutz

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Corporate Concentration and Public Policy. By Harry L. Purdy, Martin L. Lindahl, and William A. Carter. New York: Prentice-Hall, Inc., 1942. Pp. xiii+650. $4.25.

This is a disappointing book—at least, it disappointed the reviewer. It represents another of those ambitious attempts to combine in one text (*a*) a survey of the economics and the law of corporate enterprise organization, (*b*) a survey of the economics and the law of "industrial organization," and (*c*) an outline of pricing problems. Perhaps a good three-in-one text will someday be written. Certainly if "production" is guided by "demand," one should be able to look forward confidently to its early appearance. But, judging by achievements in this direction to date, we shall have to wait some little time yet. Whatever may be the case with "the economies of vertical and horizontal [not to mention three-dimensional!] integration" in industry, they appear to be extremely difficult of realization in textbook writing.

From the foregoing it should not be inferred that the book under review has no worth as a text of the handbook type. It manages to discuss

many important topics, and some of these are deftly probed. The work is divided into six parts, of which only four are numbered. The introductory part reviews the achievements and the "faults" of "American economic individualism." Part I is concerned with the business corporation, its development, and its perversion. Part II, on industrial monopoly, sketches the concentration of control in the tobacco, oil, aluminum, shoe-machinery, farm-implement, and cash-register industries. The longest, and best done, part of the book is the third, which summarizes the evolution of antitrust policy and the work of the Federal Trade Commission. Part IV is captioned "Oligopoly and Industrial Cooperation." The principal criteria indicated for the selection of industries treated in this section appear to fit equally well several of those reviewed in Part II. Conversely, it is difficult to understand why such industries as steel, meat-packing, glass containers, sugar, sulphur, and anthracite coal, covered in Part IV, might not with equal propriety have been included with those surveyed in Part II. At the end of Parts II and IV are chapters on the "economics," respectively, of monopoly and oligopoly. The work concludes with two brief chapters discussing prospective developments of public economic policy.

Despite its shortcomings, which in the reviewer's opinion are serious, the book should be welcomed by teachers in search of a text providing an up-to-date survey of significant developments in the perennial problem of public control of business. The viewpoint of the authors is consistently liberal. There is little suggestion of dogmatism in discussions of theory and no trace of didacticism in the treatment of policy. The mass of factual information assembled by the Temporary National Economic Committee inquiry has been freely utilized and interpreted, on the whole, with discriminating care. But acute analysis is not one of the distinguishing features of the book.

Perhaps because of the way in which the issues are framed, the impression left by the two concluding chapters is that the authors are equally pessimistic of the outcome of both of the "possible public policies" which they explore. These are: "the reconstruction of competitive individualism" and "the abandonment of competitive individualism."

MYRON W. WATKINS

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Planning for the South: An Inquiry into the Economics of Regionalism. By JOHN V. VAN SICKLE. Nashville: Vanderbilt University Press, 1943. Pp. x+255. $2.75.

The South, almost by convention, has charm and is a national problem. Perhaps nearly everyone, like Mr. Van Sickle, considers the South the most distinctive larger region within the nation, and upon reflection most people would probably attribute this distinctiveness to the social milieu engendered by the anomalous presence in these days and times of a ruling class and a virtually servile minority of a distinctive color. Moreover, reflective persons will not forget this social milieu when they turn to the problem aspect of the South.

The problem is posed by the desperately low standard of living that has persisted in this region for generations. The natural resources of the South have been overestimated, but they are not so poor as the prevailing standards of living would suggest. And, even so, why should not flows of resources develop that would adjust these interregional disparities? Before indicating Mr. Van Sickle's approach to this question, let us attempt to place this low standard of living in what appears to be its appropriate setting.

Per capita incomes are generally cited as illustrative of the regional disparity in living standards, but in a sense these measures are slightly misleading. The disparity would not be quite so great were we to compare income per capita of labor force rather than per capita of population. For example, in Arkansas 58 per cent of the population lie outside the age range of fifteen to sixty-five, while in the United States as a whole this percentage is 47. To the extent that the difference in average income is attributable to this difference in dependency, it would not evidence an inefficient use of resources. A more informing comparison could be made if we had breakdowns between the incomes of whites and Negroes. In the reviewer's state some 27 per cent of the labor force is Negro, and in southern rural communities, it is said, the family income of whites is about 2.3 times that of Negro family income. If, for example, the 1941 total income be distributed between whites and Negroes such that each white in the labor force receives 2.3 times as much as each Negro in the labor force, then the income per white member of the labor force would be around $1,060 and the income of each Negro member would be $461. Thus, a regional com-

parison of white with white, though still grossly unfavorable for the Arkansas whites, would be not nearly so unfavorable as the crude per capita comparisons would indicate. Or, again, were we to exclude the relatively large number of sharecroppers and tenants, the average income of the remaining whites would compare yet more favorably. In all these southern states tenancy appears to be the greater, the more fertile the land. In Arkansas, the very fertile Mississippi, Arkansas, and Red River deltas are the areas in which tenancy is concentrated, some 70 to nearly 90 per cent of the farms being operated by croppers or tenants. The incomes of these farmers of fertile lands are low indeed.

Now, the exclusion of these poorer classes certainly makes Arkansas' income no greater. But the point to be made is that the incomes of the responsible property-managing classes is not so low as frequently quoted statistics would indicate; and the general lowness of southern standards of living is not to be considered apart from the social environment of racial discrimination and a land-tenure system that promotes indolence and strikes down incentive. In suggesting reforms, it is easy to underestimate the toughness of this social environment and to overestimate the efficacy of legislative reforms.

Mr. Van Sickle's approach to the problem recognizes but does not appear sufficiently to stress these essential features. However, his book is an interesting example of an outline of policy formulated in the liberal tradition. Accepting the persistent regional disparities in standards of living as evidence of misused resources and obstructed resource flows, he proposes certain legislative changes by which he would facilitate resource flows that would tend to remove the regional differences in remuneration. For the Negro question he suggests something that he terms "equitable segregation," a term that he attributes to Malinowski. To the reviewer's mind, this is one of the weaker of his suggestions, and I should think that it would be as unappealing to the whites as to the Negroes. For the relatively large poor land areas of the South, he proposes land classification and rural zoning leading to reforestation and pasturing. He attributes to the present administration of the property tax much of the uneconomic land use and speculative holding of land, and he suggests the Austrian method of establishing cadastral values as the tax base. For the land-tenure system he advocates tenancy acts similar to those of certain European countries. These measures are aimed at achieving a more economic use of the region's natural resources. The remainder of his proposals are directed at what he considers obstructions to socially desirable flows of resources. He objects to certain features of the social security program. Rather than one law for the nation, he conceives of measures appropriate for specific areas. Unemployment insurance appears as the least essential link, and he feels that it tends to hinder a desirable resource flow. Public works should be geared to the social security program, but they should be designed to facilitate resource reallocation. Thus, they should be concentrated in areas of expanding opportunity, and the unemployed in areas of declining opportunity should be aided in relocating themselves. The wages paid should bear a relationship to the prevailing local wage. He discusses the obstructions to economical resource use implicit in the tariff, freight-rate discrimination, and the Fair Labor Standards Act. The objections to this latter are directed against its failure to provide for regional wage differentials that in fact have a functional purpose. He objects to collective bargaining on a national scale that supports the drive to break down regional wage differentials, and he is critical of housing subsidies and slum clearance that are not financed by taxation that would place the cost upon the benefited industrial locations. He proposes differential federal aid for health, education, conservation and improvement of natural resources, and for public works so located as to promote population adjustments. Finally, certain changes are proposed for federal and local fiscal practice.

The book outlines a program of "liberal planning." It may possibly be unfortunate that his later chapters did not come earlier in the book. Some may feel that the conclusions cover a rather broad field of public policy.

RUTLEDGE VINING

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Mathematical Statistics. By S. S. WILKS. Princeton: Princeton University Press, 1943. Pp. xi+284. $3.75. Lithoprinted.

Mathematical statistics—the art of drawing inferences from statistical observations—has come to be developed and used in relation to many different domains of application. Based on mathematics and on logic, its underlying principles and procedures are the same in each

field to which it is applied. But its literature is partly scattered among many journals devoted principally to other sciences and partly concentrated in a few specialized periodicals and memoirs read more by those engaged in developing this young science than by those who are interested in it as an aid to their chosen field of research.

This state of affairs has been inevitable, in view of the rapid growth of statistical theory. It is extremely difficult at this stage to systematize and present in well-rounded form a body of ideas that is being revised and added to year by year. However, the absence of a systematic treatise setting out both the mathematical theory of statistics and its relation to the main fields of application has begun to impede wider acceptance and well-advised use of statistical methods.

Professor Wilks has done a great service to the cause of statistical theory by making available in book form notes from a two-semester course given at Princeton University. This book is a first step toward a systematic exposition of the mathematical theory of statistics and will provide a most valuable framework for further systematizing efforts.

The text is written in the crisp language of mathematical reasoning and will be enjoyed most by those who have trained themselves in reading that form of prose. Apart from the first two chapters, which introduce general concepts and techniques, the subject matter falls into two categories. Chapters iii–v and viii–xi develop the mathematical theory connected with specific distributions and specific functions of the observations used to estimate or test the characteristics of these distributions. Chapters vi and vii deal with the general theory of statistical estimation and of the testing of statistical hypotheses.

The specific part has been greatly expanded, as compared with a similar previous publication by the same author.[1] Among the subjects dealt with are: sampling from the binomial and the multinomial distribution and from the normal distribution in one or more variables; normal regression theory; analysis of variance; and the theory of runs. The treatment is distinguished by great mathematical elegance and generality, and care is taken to show the common elements in widely diverse applications. For instance, the analysis of variance and its applications in agricultural experiments are developed in a very instructive manner as a special department of normal regression theory.

In the chapter dealing with the general theory of statistical estimation the concepts of confidence intervals, point estimation, and tolerance intervals are developed in succession. The subject of tolerance intervals has been developed recently, particularly by the author himself, in connection with problems of quality control and the estimation of probable limits of variation of products manufactured under controlled conditions. The subject is here fitted into its proper place among other estimation procedures.

It appears to the reviewer that the author's teaching experience has led him to give greater prominence to educational considerations, in the selection of material and in the method of treatment, than was done in the earlier publication referred to. Some difficulty is experienced, however, in reconciling this consideration with the desire for mathematical generality of treatment. For the latter reason, the method of moment generating functions is used throughout for the derivation of sampling distributions, including cases where more elementary (but more elaborate) methods of proof are available. But the general proposition on which the method of moment generating functions is based is stated without proof in order not to transcend the level of the course. The hope may be expressed that this proof—and that of the efficiency of maximum likelihood estimates—will be inserted when the author comes to fulfil his intention of issuing the book in permanent form. Meanwhile, those who like to go to the bottom of things will find it helpful to use the previous lectures in conjunction with the present work.

Readers of this *Journal* will desire to know in what respects the book and its subject matter are useful to economists. There is a specific and a general answer to this question. The specific answer can be given by pointing to those instances in which existing statistical theory has a bearing on the material and methods used by economists. Many economic data are being collected through sampling procedures, and sampling theory is needed to judge the accuracy of such data. Methods of quality control are important to the production economist. The statistical theory of agricultural experiments can also be applied to the industrial experiment designed to determine how the quality and quantity of production depend on the quantities of

[1] S. S. Wilks, *Statistical Inference* (Princeton, 1937).

production factors used and on the method of production. Normal regression theory provides a useful starting-point in studying the reliability of statistical demand and supply curves and other economic relationships determined from time series.

The general answer to the question raised above is that this book contains: (*a*) a succinct and clear exposition of the general theory of statistical inference, and (*b*) a wealth of specific theory designed to meet the conditions of a great many fields of application. In the contents of this book economists thus possess both a general theoretical framework and instructive examples, which will be of invaluable assistance when they set out to develop the statistical theory specifically adapted to the estimation problems concerning economic time series and the relations between them.

TJALLING KOOPMANS

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Income Size Distributions in the United States, Part I. By CONFERENCE ON RESEARCH IN INCOME AND WEALTH, NATIONAL BUREAU OF ECONOMIC RESEARCH, INC. ("Studies in Income and Wealth," Vol. V.) New York, 1943. Pp. xxvi+131. $1.00.

In 1938 the Conference on Research in Income and Wealth set up a committee, under the chairmanship of Milton Friedman, to survey the basic studies on the distributions of income by size and to prepare recommendations for co-ordinating future work on the subject. This volume is the product of that committee.

Although the book will hardly prove appetizing to the general reader, it is essential to all workers in the field of income distribution. Chapter i, which was written by Professor Simon Kuznets, deals with the purposes of income distribution and the bearings of the purpose upon the choice of concepts. Information on income-size distribution is desirable because of its relationship to the disposition of income, to other economic and social activities and attitudes, and to the general welfare. The purposes affect the choice of the most suitable definition of "income" and of "income recipient" and of the appropriate "time and area units." Mr. Kuznets concludes that, in view of our present small stock of knowledge, it is advisable to make our definitions as broad as possible.

Chapter ii is a brief summary of more detailed reports on the sixteen most important studies in income-size distribution. (The detailed reports have been published in mimeographed form as Part II of the present volume.) The chapter contains four excellent tables, giving (1) a general description of the bodies of data: the agency in charge of each study, the period, area, and population covered, and the nature of the income data; (2) the definitions of the economic unit: the definitions of the "family" and the "individual," and the inclusion or exclusion of roomers, boarders, guests, persons away on business, in school, in institutions or in C.C.C. camps; and (3) a description of the income data used in the income-tax studies and in the surveys. A few pertinent comments on the relative reliability of the income-tax, social-security, and survey data are given at the end of the chapter.

The comparability and deficiencies of the data are analyzed in chapter iii. Stress is laid upon the differences in definition and coverage and upon the inadequacy of the data on farm income and imputed income. The questions of the treatment of personal expenses, taxes, and changes in wealth are touched upon. The need for investigating the why and how of changes in income distributions is indicated in passing. On the basis of this analysis chapter iv presents a set of recommendations designed to reduce the heterogeneity of the data. In essence, the Conference recommends that each study adopt, in addition to its own special-purpose concepts, a standard set of definitions of "income," "income recipient," "class intervals," and "time and area units." The acceptance of these recommendations by investigators in the field would go far toward co-ordinating research on income-size distributions.

JACOB L. MOSAK

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The Whitesmiths of Taunton: A History of Reed & Barton, 1824-1943. By GEORGE SWEET GIBB. ("Harvard Studies in Business History," Vol. VIII.) Cambridge: Harvard University Press, 1943. Pp. xxxiii+419. $3.50.

In this country it is seldom that one finds a business enterprise having a history extending

over a century with records as extensively preserved as in the case of Reed and Barton. The survival of men who had long connections with this concern, in which vigorous leaders created strong traditions of general policy, has also made it possible substantially to supplement the written records by interviews and correspondence. As a result, the author has been able to present an unusually full and well-rounded history of this concern's growth and business policies.

The enterprise that began in 1824 when a partnership with $2,000 capital embarked upon the manufacture of britannia ware, then rapidly displacing pewter in popular favor, went through several shifts in ownership previous to 1840. Owing chiefly to technical ability, it made fair progress; and by 1832 it employed 55 workers and shipped out $34,000 worth of goods, probably much on consignment. In 1833 it was organized as a corporation, only to fail in the following year with a large stock out on consignment.

In 1840, following several shifts, the partnership of Reed and Barton emerged; and the next twenty years, under the leadership of Henry Reed, primarily a production man always insistent upon quality of product, brought marked success, so that by 1850, when britannia ware reached the peak of its popularity, the company, with sales around $100,000 a year, was the largest and best known in the industry, though it was soon after surpassed in size by the combination which constituted the Meriden Britannia Company. In 1848, sensing the rising demand for the new electroplated silverware, this line of production was added. By 1859, assets had risen to $107,000 and sales to $129,000, while in 1860 the employees numbered 125. Evidently, it was still a concern of very moderate size, but it was this period that witnessed the transition from a workshop to a factory organization.

The next forty years brought a more rapid growth under the far more aggressive selling policies inaugurated by George Brabook, and in 1886 the partnership was converted into a corporation capitalized at $600,000. The growth was financed by profits retained in the business, no dividends being paid from 1860 to 1888, while the partners' salaries remained very moderate. By 1887 the number of employees had risen to 800, and in 1892 sales passed the $1,000,000 mark. In 1889, finding that solid silverware was cutting into the market for the better grade of electroplated ware upon which the company had concentrated, it took up the manufacture of this product; and within fifteen years sterling flatware had become its largest line.

On the death of George Reed in 1901 his son-in-law, William B. H. Dowse, became president of the company and soon, by acquiring a majority of its stock, established complete control, which was used in a vigorous manner to introduce modern methods of production, selling, and general management. There were profits every year from 1902 to 1923, which, after being used for a much needed strengthening of finances up to 1906, made possible a more liberal stock- and cash-dividend policy. In 1925 Sinclair Weeks succeeded his father-in-law as president and introduced a sounder accounting policy and technical modernization of the plant. Figures on employees and sales volume for this more recent period are not given.

As significant general features in the history of this enterprise, the author notes that, since 1830, there has been no breach between ownership and management. An unusual flexibility and consistency in the quality of family control existed; whenever a weakness in some phase of management threatened to become serious, the right man was found to remedy the defect, and the result was a remarkably long-continued and stable prosperity. In general, the management was characterized by the conservatism so often associated with old New England enterprise. Out of a net worth which rose from $2,000 in 1824 to $1,549,012 in 1943, 86 per cent of the increase was derived from plowing back earnings into the business. Except on the production end, where numerous innovations were introduced, the management seems to have been a conservative follower of its rivals rather than an initiator of new ideas and policies. Quality of product was consistently stressed more than volume of output. The rather close personal relationship maintained with the employees resulted in long terms of service and a marked spirit of loyalty, so that, when unionization was recently proposed, it was twice turned down by the workers.

Among the detailed facts presented, those relating to marketing methods are likely to be of most general interest, since this is a field of economic activity where historical records are meager. Just how important these or any other details may be as a basis for generalization will be determinable only when a far larger number of similar histories is made available, but each

such study is suggestive and adds its mite. Even in the case of the whitesmiths' industry, we are uncertain how to evaluate the record of Reed and Barton until we know more of the general history of the industry, for, while the author has been able to gather a few facts about the leading competitors, such as the Meriden Britannia Company or Gorham, much of the general background still remains a blank.

CHESTER W. WRIGHT
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History of Macy's of New York, 1858–1919: Chapters in the Evolution of the Department Store. By RALPH M. HOWER. ("Harvard Studies in Business History," Vol. VII.) Cambridge: Harvard University Press, 1943. Pp. xxvii+500. $3.75.

The department store is a product of the economic revolutions that so transformed the business world of the nineteenth century. The case history of Macy's, one of the first such stores in the world, is well told by Professor Hower. War duties have interrupted his researches, but we are promised a sequel covering the period after 1919.

The author points out that there have been periods when "the most successful businessmen turned to specialized activities in a way that amounted to a general movement, not only in retailing but in all branches of the business world." There have been times, too, when there was a tendency in the reverse direction toward nonspecialization. During our Colonial period, because of limited markets, the trend was toward nonspecialization. Then, as the country became more settled and as transportation improved, the movement veered toward specialization. Each time the pendulum swung too far, and those who initiated the trend back usually made handsome profits and were then copied until the other extreme was reached. About the time of the Civil War a new movement toward nonspecialization set in. This is where the department store and Macy's appear. Nonspecialization took one of two forms: either the integration of producing and selling, including sometimes manufacturing, banking, insuring, exporting, wholesaling, and retailing; or the handling of a wide variety of products at one level, say, retailing. The department store joined the two, giving us the "combination of many activities and a wide variety of goods within a single enterprise." Department stores frequently rose out of the dry-goods business (pp. 74–75).

Rowland H. Macy, of Quaker stock, was born and reared on Nantucket Island. Judged by his early career alone, he was "restless and incompetent" and "had made at least four beginnings in the dry goods business in the East without success." Thrice had he "yielded to the lure of adventure and the West: first, as a whaleman to the Pacific; secondly, as a 'forty-niner' to California; and lastly, as a land speculator in Wisconsin" (p. 33). In 1858, aged thirty-six, he returned east and began again in the dry-goods business with a modest store on Fourteenth Street in New York. New York then dominated the nation's dry-goods wholesale business and, being a city, was more suitable for Macy's radical methods of doing business than the towns in which he had previously resided. He had four practices which he loudly proclaimed to the world and which are still employed by Macy's. They included: (1) dealing for cash only; (2) selling at one price to all customers (unusual at that time); (3) selling at very low prices; in fact, underselling his competitors on most products; and (4) aggressive advertising. To be able to undersell, Macy followed auctions and bargain sales, yet kept a weather eye on quality, bought directly from manufacturers, got better prices for cash, avoided bad debts by selling for cash, and promptly cleared out slow items. Macy's started to become a department store in the autumn of 1860, when he opened a fancy goods department. Competition was keen, and he sought "by means of diversification to cut down expenses" and also to iron out the seasonal demand for dry goods. By the early 1870's Macy's was clearly a department store, although that name was not commonly used until the 1890's. When Macy died in 1877, he was worth about $400,000.

During the 1880's the firm stagnated. Macy's son, Robert, was a ne'er-do-well, and so the company was taken over by a series of former assistants and distant relatives of mediocre ability. The only energetically operated departments in the store were the china and glassware ones, since 1875 leased on a sort of partnership basis to Isidor and Nathan Straus, sons of a cultured Jewish refugee from the German Revolution of 1848. Nathan was easy to meet, a showman, always full of new ideas; while Isidor was quiet, had an eye for detail and the account

books, and fine judgment. In 1888 the Straus brothers were taken into the business, and once more Macy's commenced to grow.

Originally Macy's Fourteenth Street location put it uptown, but by 1902 Macy's was slipping below the main shopping district. Also the clientele was changing: "the baby carriage trade was driving out the carriage trade." Again Macy's moved above the main shopping district to Thirty-fourth Street, courageously entering what was then a notorious section of the city. But the firm's foresight was quickly vindicated when the Pennsylvania Railroad built its giant terminal near by. The new Macy's seven-story building covering over twenty-three acres greatly impressed New Yorkers. About this time also Macy's price-cutting practices brought the company much publicity when it fought the book and the gramophone trusts clear to the federal Supreme Court and won. In 1912 Isidor Straus died in the "Titanic" disaster. Nathan soon sold out to Isidor's sons, and today the grandsons are active in the business. By 1929 the store occasionally, on a peak day, did a million dollars worth of business, which was as much as Rowland Macy did in the whole year of 1870.

This book should interest a variety of economic and business historians. There are sections or chapters on retail selling, advertising, labor conditions, and managerial policy. Figures (usually percentages) are presented showing the rate of turnover of goods, the gross margin, advertising expense, store expense, profits, etc., since about 1870. One appendix deals with the rise of department stores in Paris; another touches on early Macy accounting. There are fifty-five pages of footnotes at the back of the book. This reviewer found no glaring errors of fact. He believes, however, that the author's professed ideal, a volume of under three hundred and fifty pages, could have been achieved without loss. The book, though excellent, is heavy with trifling detail in parts.

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American Agriculture, 1899–1939: A Study of Output, Employment and Productivity. By HAROLD BARGER and HANS H. LANDSBERG. New York: National Bureau of Economic Research, Inc., 1942. Pp. xxii+440. $3.00.

In recent years new records for agricultural production have been set as each succeeding year's production exceeded that of the year before. Favorable weather and wartime necessities have been major factors. During this same period the total volume of agricultural employment has changed very slightly, though many experienced workers have had to be replaced by persons less experienced or less capable. The inability to secure fertilizer or machines in the quantity deemed necessary by farmers and administrators makes the record of increased productivity of agricultural workers a striking one and indicates that agriculture was not operating at full efficiency in 1939.

Viewed in this setting, the report on output, employment, and productivity in American agriculture during the forty years 1899–1939 seems more remote than the recency of its closing date suggests. The series lose much of the predictive value which presumably results from an analysis of developments over a period of time ordinarily long enough to establish trends. On the other hand, the report gains in significance by providing the perspective of four decades, which include World War I, and for which reasonably adequate statistics are available.

The major portion of the book is given to a recounting of changes in agricultural output for the major individual products and for the total, and of changes in technology, employment, and productivity of agricultural workers. Since a large share of agricultural production is concerned with food, there is a special chapter on food consumption, supplies and requirements, and the relation of food and agricultural output.

The compilation of statistics on these topics is catholic and careful. Numerous footnotes and a long list of acknowledgments indicate the efforts which the authors and their staff made to check on adequacy of sources, comparability of data, and discrepancies in the published series. Nonetheless, they appear to have accepted many figures more readily than do the technicians whom they consulted. The discussion of the problems in constructing consistent series for some of the data covered adds little to a solution of these problems. In the discussion of the series on agricultural employment, for example, some of the major differences between available series are pointed out. But the solution, using "farmers" and adult male laborers, understates the decline during a portion of the period and would considerably overstate the decline if it were projected to 1943. Moreover, the growing numerical im-

portance of part-time farmers and other groups who do not correspond to the common-sense definition of farmers makes it increasingly doubtful that complete reliance can be placed on a concept of gainful workers in agriculture which compels the respondent to list only one occupation.

In the final chapter, dealing with agriculture in the nation's economy, the conclusion is reached that the number of persons likely to be engaged in farming in the future will not be influenced appreciably by government policies. Further, it is argued that aggregate agricultural output is likely to decrease. Among major long-range factors discussed are technical progress, the slowing-down of population growth, the inelasticity of the demand for foodstuffs, and the decline in the share of agricultural products absorbed by overseas markets.

This exposition is followed by a vigorous rebuttal of the conclusions by C. Reinhold Noyes, vice-president of the Bureau. He argues that it is inappropriate to extrapolate series of such short duration, which may be no more than swings in long cyles or parts of movements in historical processes; that the conclusions drawn do not follow from the data; that it is not possible to draw conclusions as to the entire economy from an examination of only one sector; and that the "trends" set forth are net changes resulting from settlement of the country and industrialization.

A brief review cannot enter into so large a field. The conclusions reached by the authors are not a necessary part of the book. Its major value lies in its accomplishment of the laborious task of collating a vast amount of data and setting them forth in a manner that facilitates comparison. This contributes to a sharpening of the research tools in this field. The authors hold that the striking changes which have occurred since 1939 are essentially transitory. It might be asserted, on the other side, that public policy will call for and facilitate a rapid expansion of agricultural output and that important steps have been taken toward a solution of the problems of distribution in a way diametrically opposed to the attempted restrictions of output in the early thirties. It may not be amiss to point out, also, that a prediction based on individual responses to the economic aspects of agriculture alone may overlook other important human values which are closely associated with agriculture in the value systems of many persons engaged in that occupation and many others who are not.

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American Studies in Honor of William Kenneth Boyd. By MEMBERS OF THE AMERICANA CLUB OF DUKE UNIVERSITY (DAVID KELLY JACKSON, ed.). Durham, N.C.: Duke University Press, 1940. Pp. ix+377. $4.00.

Under the leadership of the late William Kenneth Boyd a group of professors at Duke University organized the Americana Club. The purpose was to present papers and to discuss problems relating to "the American past." Eight papers read at club meetings are here assembled as a memorial to the founder, whose death occurred in 1938.

Like most memorial volumes, this one lacks something in unity; and the essays vary considerably in quality. But the standard is high, and the contributions are worthy of independent publication. The subjects range from agriculture to literature. They all deal with the South.

Four essays treat social-science subjects. Joseph J. Spengler discusses the political economy of Jefferson, Madison, and Adams; William A. Mabry describes ante bellum Cincinnati and its southern trade; Charles S. Sydnor tells about state geological surveys in the Old South; and Edgar T. Thompson traces the natural history of agricultural labor in the South from early times to the present.

Spengler pays some attention to the origin of ideas but gives most of his space to a comparison of the views held by these early fathers on such subjects as price, production, distribution theories, money, banking, and social policy. He finds that they generally agreed on basic matters and that they understood what some moderns do not seem to understand: "that an economic system could serve any given set of preconceived ends only on condition that an appropriate politico-economic milieu were established."

Mabry's findings are not new, and Sydnor's are interesting but not particularly important to either the economist or the historian. Thompson, on the other hand, presents the best short

survey of southern agricultural labor that has yet been offered. He traces its development from early apprenticeship and indenture to the collapse of cotton tenancy in our own day. He keeps his story on sound historical ground and sees developments as natural both for the section and the nation. He comes out in the end with an intelligent defense of the plantation system, past and present.

The remaining essays deal with literary persons and subjects. Jay Hubbell's study of literary nationalism in the Old South is, in most ways, the best in the book. Charles Anderson contributes an excellent essay on Gayarré and Hayne, and David Jackson one on Phillip Pendleton Cooke. Clarence Gohdes completes the volume with one of the few studies that have been made of the Unitarian church in the South.

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The United States and the Far East: Certain Fundamentals of Policy. By STANLEY K. HORNBECK. Boston: World Peace Foundation, 1942. Pp. vi+100. $1.00.

This is a small book on an important subject. "Certain fundamentals of policy" are set forth in the words of "the White House spokesman," of the President, of the Acting Secretary of State, and, most frequently of all, of the Secretary of State. The address, of which the book under review is an elaboration, was uttered in the face of a catastrophic naval defeat which has, at least for the moment, rendered null a hundred years of American policy in the Far East.

Long political adviser to the State Department, Dr. Hornbeck[1] has thus doubtless often been a party to the direction of United States foreign policy, which he defines, in the words of former Secretary of State Frank Kellogg, "as a continuous growth or evolution." Its function, according to President Franklin D. Roosevelt, continues the writer, is "to defend the honor, the freedom, the rights, the interests and the well-being of the American people." Secretary of State Cordell Hull, cited in one of the latest definitions, and rather in contradiction to the foregoing, affirms that it is not "the number of American citizens residing in a particular country .... nor .... the amount of investment of American citizens there nor .... the volume of trade" that concerns the United States. It is that "orderly processes in international relationships be maintained." The quotation ends with the surprising note that "this interest far transcends in importance the value of American trade ....; it transcends even the question of safeguarding the immediate welfare of American citizens."

The source and the formulation of United States foreign policy are stated as rarely moving far in advance of, or lagging far behind, popular opinion. Thus evidently the "state of mind" of our political majorities has supported a continuous policy concretely represented in the so-called "Open Door" *anywhere.*

Succinctly, the author surveys United States relationships to world politics since 1931, especially with Japan, "first .... to embark upon the course of wanton use of armed force in pursuit of a national policy." This led to a late shift in United States policy to one in which "control of the high seas by law-abiding nations is the key to the security of the Western Hemisphere."

Finally, the tragic negotiations carried on just before the Pearl Harbor incident of December 7, 1941, are reviewed. "The American Government," he says, referring to the United States' proposals of November 26, 1941, "emphasized for the consideration of the Japanese government, the advantages that would flow to Japan from pursuit by Japan of peaceful courses." This could hardly be an attractive offer, at least in the opinion of Japan's war lords, when the riches of the Far East lay open to them for the mere audacity of taking. Such a latter-day concept of adjustment of Far Eastern elements of conflict failed to take into sufficient consideration the frankly avowed drive for conquest by the controlling leaders of Japan.

Almost half the book is taken up with the notes exchanged between the United States and Japan regarding violations of American rights in China, the Japanese ambassador's note to the United States Secretary of State of November 20, 1941, Secretary Hull's note of November 26, 1941, and the President's message of December 15, 1941.

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[1] Dr. Hornbeck was returned to a more dynamic role in American foreign policy as chief of the Office of Far Eastern Affairs in the Department of State in January last. On May 1, he was made Special Assistant to the Secretary of State.

Ballots and the Democratic Class Struggle: A Study in the Background of Political Education. By DEWEY ANDERSON and PERCY E. DAVIDSON. Stanford University: Stanford University Press, 1943. Pp. xiii+377. $4.00.

A correlation between economic and social status and political behavior has been assumed by nearly every student of American politics from James Madison and John Taylor of Caroline to Arthur Holcombe and Charles Beard. The conflict between labor-agrarian and "capitalistic" interests has been the dynamic factor in our political history from the beginning. The "war" of the Regulators, Shay's Rebellion, the "Thermidorean" movement for the Constitution, the war between Jefferson and Hamilton, the Jacksonian "revolution" of 1828, the Civil War, the Populist Revolt, the Progressive movement, Woodrow Wilson's crusade for the "New Freedom," Franklin Roosevelt's fight for a "New Deal"—all lend themselves to this interpretation.

It is rare, however, for students to probe beneath the surface of these generalizations to the raw data reflecting the motivation of political behavior at the local level. The great virtue of Anderson and Davidson's study is that it does precisely this. It is based on a careful examination of the economic and social status and the voting behavior of some seventy thousand registrants of Santa Clara County, California, during a ten-year period, 1928–38, with particular emphasis on the elections of 1932 and 1934. The scope of the study is indicated by the categories under which the data were classified and analyzed. After making due allowance for traditional party allegiance, the authors examine such factors as occupation, income, social prestige, residence, party organization and leadership, education, propaganda, current stereotypes, sex, marital status, nationality, race, and religion in influencing political behavior.

The authors' results are neither novel nor surprising. Professionals, merchants, and other business proprietors and managers, public officials and housewives, were predominantly Republican. "Those whose net vote favored the Democratic candidate were the farmers, the manual workers, and the retired persons and student groups." These results tend to confirm on a local level the familiar generalization that the Democratic victories since 1932 have represented the triumph of what in effect is a Farmer-Labor party. The unstable nature of this combination is revealed not only in this volume but by election results since 1938.

But there is much more to this study, however, than a verification of familiar and more or less obvious generalizations. The chapter on "Class Consciousness and Political Behavior" represents the finest analysis of the extent of class stratification in America, its causes and its cure, that I have seen. It should be read by every American having the welfare of his country at heart. The authors are unnecessarily severe in their criticism of others who have discussed this problem, and I am impressed with the superficial character of some of their own analyses, notably of the etiology of the two-party system. But, in spite of these blemishes, it is a distinguished piece of work whose significance transcends the seventy thousand voters of Santa Clara County.

It is unfortunate that the style of composition is often needlessly turgid and obscure. Why, in heaven's name, is it necessary to torture language into a sentence like this: "We are also impressed not only by the probable existence of increments of amount in the distribution of the economic attributes of class but also by the probably very great diversity of qualitative differences in the causation of such quantitative increments."

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